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CONTENTS

The Late Lord Wakehurst

LORD WAKEHURST, whose regretted death on April 30 we record elsewhere, was an ideal railway director for nearly forty years, although at the outset of his career his interests were mainly political. In 1889 at the age of 27 he was elected Conservative M.P. for Brighton, which he continued to represent until 1905, and on two occasions during that period he was private secretary to the head of a department. He first became directly connected with railways on his election in 1896 to the board of the London, Brighton & South Coast Railway Company, and was its last Chairman, elected in December, 1922, just before it became merged in the Southern Railway Company, of which he was at first a Joint Deputy Chairman, later the sole Deputy Chairman, and in 1932 Chairman. Continued ill-health compelled him to retire from the Chairmanship of the Southern Railway in January, 1935, but he remained a director until a few days before his death. As Mr. Loder, he came of an old Sussex family with a seat in the heart of the county, and his public services were recognised by the bestowal of a peerage in 1934. Lord Wakehurst and his wife were central figures in the activities of Brighton for many years and their popularity was outstanding. As a railway director Lord Wakehurst obtained an intimate working knowledge of the companies with which he was connected and, like Mr. Whitelaw, Chairman of the London & North Eastern Railway, he made railway matters his chief working interest. The charm of his personality always overcame difficulties and ensured his popularity with his colleagues, and with the officers and staff. Some time ago he had expressed regret that the railway directors of today were not brought so closely into touch with all the officers as they had been in the smaller undertakings before the days of grouping.

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The Late Sir Philip Nash

Sir Philip A. M. Nash, whose death on May 1 we regret to record, had a very varied career in connection with transport and in the public service. Born in 1875 he began railway service in the Locomotive Department of the former Great Northern Railway in 1897, but two years later he went out to India and joined the staff of the East Indian Railway of which he eventually became Assistant Agent. While on leave in England in 1915 he was invited by Sir Eric Geddes to assist him at the Ministry of Munitions where he was given a position of great responsibility. In 1916 he was appointed Deputy Director-General of the British Expeditionary Force in France, and in 1917 succeeded Sir Eric Geddes as Director-General. His next appointment was that of Inspector-General of Transportation, Western Front, in 1918. He was three times mentioned in despatches and was the recipient of decorations from the French, Belgian, Italian, and American Governments. His British honours included the C.B. (Military Division) in 1917 and the K.C.M.G. in 1918. Relinquishing his commission with the honorary rank of Major-General, Sir Philip Nash was from 1919 to 1921, Director of Traffic, Ministry of Transport, but in November 1921 was appointed a Managing Director of the Leeds Forge Company, and in the following year became Chairman of Metropolitan-Vickers Electrical Co. Ltd., a position which he resigned in 1931. In that capacity he paid visits to the United States in order to study electrical conditions there and to South America in order to examine the possibilities of electric traction developments in Argentina and Brazil.

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The Week's Traffics

Considering that the traffics of British railways for the past week compare with those of the week preceding the Silver Jubilee in 1935 they are generally regarded as satisfactory. As will be seen from the accompanying table passenger train receipts of the four group companies are substantially down but goods and coal earnings are up. For the 18 weeks of the current year the aggregate receipts amount to £49,996,000, an increase of £1,314,000, or 2·70 per cent. This increase is made up of £39,000 from passenger train earnings, £736,000 from merchandise, and £539,000 from coal.

	18th Week						Year to date	
	Pass., &c.		Goods, &c.		Coal, &c.	Total	Inc. or Dec.	
	£		£		£	£	£	%
L.M.S.R. ..	− 63,000	+	47,000	+	19,000	+ 3,000	+ 616,000	+ 3·11
L.N.E.R. ..	− 15,000	+	10,000	+	15,000	+ 10,000	+ 454,000	+ 3·12
G.W.R. ..	− 26,000	+	5,000	+	5,000	− 16,000	+ 176,000	+ 2·17
S.R.	− 31,000	+	6,000	+	7,000	− 18,000	+ 68,000	+ 1·09

London Passenger Transport receipts for the past week were £560,500, a decrease of £30,400 for the same reasons as apply to the four main line railways.

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Happy Travellers

In the matter of foreign travel we are still a nation of adventurers. The foreigner who visits England does not do so until he has mastered such ingratiating phrases as "please," and "thank you," but the Englishman is content to penetrate any country with a knowledge of the local equivalent for "no" as his sole contribution towards international felicity. This is convenient for dealing with Customs officials and touts, but hardly conducive to variety or brilliance of discourse. How is it then that

we are as well received abroad as we are? After a run from Liverpool Street to Parkeston Quay and back in the new stock (described on page 931) for the L.N.E.R. Hook and Antwerp Continental, we ascribe it to our boat trains and steamers. Users of this service, at least, must reach the other side in a frame of mind permitting them to be cordial in the most emphatic negative. As for visitors to our shores, after nourishing a secret fear that a compulsory cold bath may be a part of the British immigration formalities, they are greeted on the train with piping hot water to wash in. The atmosphere of the carriages, too, while free from draughts, will support life even in the exacting respiratory systems of Englishmen.

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Overseas Railway Traffics

A general set-back in the traffics of the principal Argentine railways has been apparent during the past fortnight except on the Buenos Ayres & Pacific which added during that period £6,675 to its previous increase. On the Central Argentine the increase of £14,382 shown a fortnight ago has now been turned into a decrease of £60,046, but the traffic of this company during the interval was weakened by four wet days and one feast day. The Buenos Ayres Great Southern decrease has been increased by £56,314 in the two weeks, and the Buenos Ayres Western increase has been reduced from £11,527 to £9,065.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	44th	99,765	+ 4,969	3,715,962	+ 277,326
Buenos Ayres Great Southern ..	44th	110,165	— 20,882	5,755,209	— 618,841
Buenos Ayres Western	44th	49,060	— 1,206	1,993,211	+ 9,065
Central Argentine	44th	94,183	— 38,531	5,231,165	— 60,046
Canadian Pacific	17th	647,200	+ 27,800	7,972,800	+ 687,800
Bombay, Baroda & Central India	4th	289,800	+ 39,525	852,225	+ 125,325

Gross earnings of the Canadian Pacific during the past two weeks show an increase of £33,200, and the net earnings for the first quarter of 1936 are £145,200 higher than those for the first quarter of 1935.

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Mozambique Railways

According to the report for the fiscal year 1934-35 the revenue of the Portuguese Government port of Mozambique and its railway undertaking increased by £150,000 over that of the preceding year to a total of just over £1,000,000. The profit on operation rose by nearly 40 per cent. to £570,814, giving an operating ratio of only 45. Of the operating surplus, £432,824 came from the railways, £137,634 from the ports and rivers, and £356 from road services. All the profit was made by the Lourenço Marques division, which had a surplus of £596,866; the Mozambique, Inhambane, and Quelimane divisions showed a combined loss of £26,052. After meeting financial and other charges, and crediting £80,000 to the reserve, the net profit for the year was £283,000, equivalent to 3·4 per cent. on the £8,245,505 at which the whole undertaking is valued in the balance sheet. A sum of £200,000 has been transferred to the improvements fund, which during the year disbursed £279,962 for new works and surveys for new lines. Extensions are now under construction from Magude to the Limpopo and on the Mozambique section. A stretch of 30 miles from Namina to Ribaué, on the Mozambique railway, was opened to traffic in March last, and surveys for a new line out of Tete are now being carried out.

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Entertainment for the Train

The many ways which exist of beguiling a train journey may be classified under two headings—those which find diversion within and those which seek it without the compartment. Among the former are the familiar pastimes of reading one's neighbour's newspaper and marvelling at the naiveté of such of his conversation as can be overheard; these, however, do not commend themselves universally, partly because of their unworthiness and partly because they demand a lengthy apprenticeship in crowded suburban carriages if they are to be practised without fear of detection. The Southern Railway therefore seeks to turn the attention of travellers to things beyond the carriage window, and distributes to holders of first class season tickets a quarterly review, entitled "Over the Points," designed to enlist the interest and sympathy of travellers in the company's manifold activities. The author, Mr. E. P. Leigh Bennett, extracts the maximum of romance and entertainment from the railway scene, and in unfolding before the short-distance traveller horizons outside the validity of his season awakes not only the desire for longer journeys but the determination to travel by train.

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L.M.S.R. Excursion Working

The period surveyed by the May issue of *On Time*, the journal of the L.M.S.R. Operating Department, includes an unusual share of exceptional traffic movement arising from sporting and other events. We have ourselves referred to the part played by the railways in connection with the departure of the *Queen Mary* from the Clyde on March 24, and *On Time* gives some further details of the L.M.S.R. operations. Special mention is made of the meritorious working of heavy trains at short intervals over the steepiy graded route from Glasgow to Greenock (Princes Pier), where in addition to other local and long-distance traffic throughout the day, eleven evening excursions arrived between 5.30 and 7.15 p.m. Ten days later the International Football Match at Wembley reversed the flow of traffic, and brought 41 specials from Scotland to London. Bookings for third class sleeping berths by travellers to the match totalled 1,741 an increase of 97 per cent. over those for the corresponding event in 1934. Reference is also made in *On Time* to Grand National traffic the working of which was improved this year by a new turntable at Aintree allowing larger engines to work through, and saving much assistance mileage.

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London Transport Memorial to Roman Procurator

During excavations at the old Roman wall on Tower Hill in 1852, fragments of a Roman tomb, including a large stone block bearing part of a memorial inscription, were discovered. This stone has long stood in the Roman Gallery of the British Museum. Thirty years later the Metropolitan Railway portion of the Inner Circle was extended to the Tower station, and in the course of the work 73 ft. of Roman wall were destroyed; the latter was photographed carefully and is illustrated by the Commissioners for Historical Monuments in their third volume on (Roman) London. In 1884 the Tower station was closed and the site remained undisturbed until recently when a substation was built by the London Passenger Transport Board on the cutting to the east of this point. A rich store of Roman remains was then unearthed, and (as recorded on page 109 of our July 19, 1935, issue), the most noteworthy find was a lettered stone which proved to be another part of the memorial stone discovered in 1852. London Transport has agreed to present the second stone to the British Museum, but, feeling that there should be some record of the memorial near the site of the discovery, has given instructions that a facsimile of the two stones shall be built into the wall of the substation. The inscription, which we set out on page 929, shows the tomb to be that of Classicianus, Procurator in Britain in A.D. 61.

Coal Distribution

The Second Hinchley Memorial Lecture delivered last year to the Institution of Chemical Engineers by Sir Harold Hartley, a Vice-President of the L.M.S.R., has now been reprinted. Its subject, "Our National Coal Resources," is treated on the broadest lines, not omitting reference to the complication of the distributive process by such factors as the multiplicity of trading interests, and the sorting and storage of private owners' wagons. An example is quoted of a railway depot in the Midlands through which the flow of coal on a typical winter day averaged about 30 wagon-loads, although the average number of loaded or partly loaded wagons in the sidings averaged 172 a day. The intricacies of shunting limited the number of wagons placed ready for despatch per engine-hour to 7·3. Sir Harold Hartley supports the unification of trading interests, to simplify distribution by setting up sales depots at railway terminals for the supply of local merchants and small consumers. The grading system could be standardised to replace the present trade descriptions, and, to meet a growing demand, coal could be delivered to such depots in containers or tank wagons ready pulverised.

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Closing of Penarth Dock

In last week's issue we made reference to the announcement that, owing to the persistent decline in traffic and the fact that receipts at Penarth dock had been insufficient for some years to cover working expenses, the G.W.R. had decided to close the dock temporarily as from July 6. This has created considerable apprehension among the various local authorities in South Wales, and we understand that on May 5 an influential deputation from the National Industrial Council of South Wales and Monmouthshire, including the Mayors of Swansea, Newport, and Port Talbot, interviewed Sir Robert Horne at Paddington in connection with the matter. The deputation urged that the company should re-consider its decision, but, after a very full discussion in which Sir Robert emphasised that the company's decision had been reached only after the most careful consideration, he intimated that, although the necessity for closing the dock was deeply regretted by the company, it was impossible, in the absence of a revival of trade, to reverse the decision. He indicated, however, that dredging operations would still be continued at the dock so that there would be no delay in re-opening it when trade once more justified such a course. In addition the company had already stated that complete access would continue to be afforded to vessels desiring to proceed to the premises of the Penarth Pontoon and Ship-repairing Co. Ltd., and the tidal coal shipping berths in the Ely Harbour would continue to be available.

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New London-Glasgow Records

Of the inaugural run made by the Midday Scot of the L.M.S.R. on its accelerated schedule, as set out on page 924 of this issue, the most remarkable feature is that the Pacific locomotive *Duchess of Kent*, which was used throughout the run, cut 22½ min. even below the curtailed times, in recovering the time lost on no fewer than nine special permanent way slowings and a dead stand of 2½ min. for adverse signals. Furthermore, over the most difficult part of the course—the 59-min. booking from Lancaster to Penrith, a distance of 51·2 miles which includes the entire ascent to the 915-ft. altitude of Shap—the 493 tare tons of the train was within 7 tons of the maximum allowed to this class of engine over Shap with trains on "special limit" timings. The climb, too, has to be tackled when the engine has already been hard at work for 4½ hours, and it is not surprising that this proved to the only part of the schedule which left the locomotive nothing in hand. But at the two extreme ends of the run, it was found possible to regain 7½ min. loss between Euston and Crewe and to arrive 2 min. early—158·1 miles in 153½ min. net—and, again, to recoup 8 min. lost between Carlisle and Glasgow and arrive 1½ min. early. It is clear, therefore, that the new 7 hr. 35 min. timing from Euston to Glasgow, enterprising though it is in its cut below previous levels of time, by no means represents the limit of possibility.

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Rail Corrugation in America

For various reasons possibly connected with American operating conditions, such as very high locomotive axle-loads, the hammer-blow resulting from the use of very powerful two-cylinder locomotives, the small diameter of heavily-loaded freight car wheels, and other factors, the problem of rail corrugation in that country has reached far greater dimensions than ever it has here. It is curious that only during the last few years has the corrugation problem become acute on U.S.A. lines; prior to this it was prevalent merely on the low rails of curves, but latterly corrugation has spread in patches to straight track as well, only the sharpest curves being found entirely immune. And as the age of the corrugated rails appears to bear no relation to the incidence of corrugation, it is clear that new causes are by degrees coming into operation. The spacing between crest and crest varies up to 3 in., and the depth between crest and hollow generally varies from two to six thousandths of an inch, though it may increase to ten thousandths or more. It is not merely the noisy running of trains over corrugated rails that is objectionable, but it is felt that the corrugations contribute materially to destruction of the track surface, resulting in loose fishbolts, low rail-joints, and other trouble, and further, that the vibration so set up cannot have other than a harmful effect on the rolling stock in its passage over corrugated track. A method used in America to grind out these corrugations is described on page 904.

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Individual Axle Drive for Steam Locomotives

While there is nothing new in the idea of separate drive to each axle of a locomotive by a series of small steam engines, the time may come when more serious consideration will have to be given to it. The argument that, owing to the expansive nature of steam, direct transmission is to be preferred because it avoids the cost and upkeep of geared mechanism, is less final today than it may have been when materials and methods of gear cutting were not so far advanced. As was pointed out by Mr. J. W. Beaumont in the paper he recently delivered at a meeting of the Institution of Locomotive Engineers, a 6-ft. diameter driving wheel running at 70 m.p.h. is making only 328 r.p.m. and that is probably about the maximum economic speed of the type of engine used, whereas it is possible to design light, high-pressure steam engines to run at three times that speed. A simple form of gearing, enclosed and working in an oil bath, would transmit the power from each engine (probably a high-pressure compound or triple expansion type) to its axle. Engines of this type have been fitted to light locomotives for several years past, and a design for a large high-powered main line locomotive was prepared not long ago on the same lines in France (see page 903). The eight-cylinder locomotive built at Derby in 1908 had each of its three coupled axles cranked and directly driven, but this was a totally different proposition from the French design.

The Railway-Owned Hotel

THE advantages other countries have obtained from what is now generally called tourism have caused many to enquire how far this country is equipped for dealing with the admittedly lucrative tourist traffic from abroad, and how this country compares with others. To answer such enquiries Mr. Arthur Towle, Controller of the L.M.S. Hotel Services, recently contributed an informative article to *The Railowner*, the monthly journal of the British Railway Stockholders' Union Limited. At the outset he contends that, although tourism brings direct financial gain to shopkeepers and caterers for public entertainment, and indirect profit to manufacturers and to the country generally, it is fundamentally a problem of transport and hotels, and that, without efficient co-ordination between these two, the tourist will not be encouraged to travel. Railway pioneers were afraid their clients would not be properly cared for by existing inns, and thus the question of proper accommodation arose. The problem was solved by railway shareholders establishing hotels throughout provincial England and Scotland which bear comparison with those similarly situated in any part of the world.

It might be urged that the provision of hotel accommodation should be left to separate private enterprise, but Mr. Towle observes that, with certain notable exceptions, such as London and well-known spas and resorts, the cities and towns where hotels have not been provided by railway companies are less well equipped in this respect than those places which have been so favoured. Moreover, if it be taken for granted that railway companies are still the parties most interested in transport, it would seem reasonable that they should have some jurisdiction over the accommodation their passengers receive, and it is only by themselves owning and conducting hotels that such control can be exercised effectively. The patronage of hotels in the provincial cities, particularly manufacturing cities, bears little relation to the conditions prevalent in London, where there is not only a business clientele but a pleasure-seeking one. In provincial towns, hotels are used largely for three or four nights a week only and the hotel has to be conducted during the week-ends with a considerable proportion of its rooms vacant. In the larger cities there is, of course, local business to be done for residents in that area, and this is an important function of the railway hotel as it forms an ever-present connection between the local business community and the railway company, although such business—from a financial point of view—cannot entirely recompense the hotel in a provincial centre for the more even standard of letting which exists in hotels in the West End of London. Largely for this reason, provincial hotels frequently cannot quote the lower charges (by comparison with similar charges in London) to which the public sometimes feels entitled. This condition probably also accounts for the comparatively small amount of hotel development in the provinces by individual private enterprise.

The functions of a railway hotel are summarised by Mr. Towle as: (*a*) to foster travel, both for business and pleasure; (*b*) to exercise in the district in which it is situated such functions as will provide a focus from which the owning company can deal with the tourist and transport services in the neighbourhood; (*c*) to help the owning company, by the amenities offered, to keep travellers to the railways; and (*d*) to increase, as an economic entity in its due proportion, the net earnings of the company. With regard to (*d*) Mr. Towle abstains from examining the detailed trading results, but, speaking of his own company, says it has always been the policy of the directors of the L.M.S.R. that their hotels shall prove as far as possible a financial asset to the shareholders quite apart from their contributory value to the system as a whole. The review of the past year's results which we publish on page 922, however, shows that catering is one of the most lucrative ancillary businesses of British railways. It would not be possible to assess precisely the value to the companies of the indirect influence exerted upon traffic by the railway-owned hotel, but at its lowest computation this must be considerable. It must always be to the interests of a railway company to encourage travel, and if hotels, which are probably one of the greatest propaganda media in the world, are owned and conducted by a railway company, this fact alone must in the long run prove of benefit alike to the shareholders and to the travelling public.

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Southern Railway Rating

THE assessment of the Southern Railway undertaking is now finally settled at £1,077,131 for each of the five years ending April, 1936, in consequence of the judgment of the Railway & Canal Commission delivered on May 5. This was the figure fixed by the Commission on February 6, 1935, after a hearing lasting from December 10, 1934, to January 23, 1935, of the appeal by the Southern Railway and others against the valuation of £2,180,000 made by the Railway Assessment Authority. In January of this year the House of Lords decided that the Commissioners had arrived at the figure of £1,077,131 on right principles, but suggested that there might be a review on questions of detail.

The Railway Assessment Authority, the London County Council, the Middlesex Valuation Committee, and the Corporations of Brighton and Croydon accordingly applied to the commission asking for such a review. The application was based on a suggestion that, upon the evidence at the original hearing, the Court had made an error in applying to that evidence the principles which it had itself laid down, and an elaborate tabular statement was put in by applicants in support of this contention. In particular it was suggested that the Court in arriving at the deduction of £11,686,000 by way of depreciation from the replacement cost of £35,000,000 for rolling stock, had not taken all relevant matters into consideration and that therefore the deduction should have been larger. The hearing of the applications lasted four days, and the Commissioners were unanimous in dismissing them. Mr. Justice MacKinnon in the course of his judgment said that the tabular statement put in was really a re-argument and a wholly new method of argument on matters that had been dealt with before, and he commented strongly on the fact that such a long period had elapsed since the giving of the elaborate evidence at the original hearing. Moreover all the calculations on which he had based the assessment figure were no longer in existence.

Although the assessment figure for the Southern Railway has been fixed for 1931-36, there still remains the difficulty of settling the rebates under the Local Government Act, 1929, which will be a problem for the Railway Rates Tribunal when it has to review the operation of the Railway Freight Rebates Scheme in the autumn. Rebates already paid cannot, of course, be recovered from the traders, but it will be a difficult matter to estimate what will be the amount of rating relief and what will be the scale of rebates for the year ending September 30, 1937. There is as yet no certainty as to what will be the respective assessments of the Great Western and London Midland & Scottish Railways, the figures of which have not so far been definitely put forward even by the Assessment Authority. The "nil" valuation of the L.N.E.R. is under appeal.

San Paulo (Brazilian) Railway

ON the main line of 86½ miles on the 5 ft. 3 in. gauge from the port of Santos inland to Jundiahy the traffic receipts showed in 1935, for which year the report has recently been issued, an increase of 9·53 per cent. in Brazilian currency. As, however, the rate of exchange at which remittances were made fell from an average of 3·9013d. in 1934 to an average of 2·81949d. in 1935, the result in sterling was a decrease of £332,625. Although in sterling there was a reduction of £315,853 in main line working expenses, net revenue of this section was £16,772 lower, at £379,994, notwithstanding an increase in currency. On the Bragantina section of 67 miles (metro gauge) there was a loss on working of £11,379, against a profit of £3,279 in 1934. In currency the operating ratio in Brazil for the whole system was 71·28 per cent., against 75·56 per cent. in 1934. The quantity of coffee carried for export rose from 673,885 tons in 1934 to 725,691 tons in 1935. The general financial position is indicated in the accompanying table:—

	1935	1934
	£	£
Gross receipts	1,283,530	1,636,750
Expenditure	995,982	1,336,918
Net receipts	287,548	299,832
Income from investments, &c.	268,032	34,853
Total net income	555,580	334,685
Debenture interest and other charges ..	439,768	274,877
Dividends	125,000	125,000
Brought forward	30,057	95,249
Carried forward	20,869	30,057

The 1935 investment, &c., income includes a transfer of £250,000 from reserve, £130,000 of which has been placed to a bridge renewal fund to provide for the reconstruction of certain bridges on the section between San Paulo and the port of Santos. This allocation to bridge renewals is included in the "other charges" for 1935, which also comprise £73,180 to rolling stock replacement fund, £43,702 for estimated loss on exchange, and £37,148 payable to "associated company under agreement." For the previous year the amount payable to the associated company was £40,169. The dividend of 2½ per cent. recommended on the ordinary stock is the same as for 1934. Throughout the year under review main line rates were modified by varying percentages, and as a result of representations to the Government of Brazil a further increase in rates and fares in currency came into force on January 1, 1936. The extension of the Sorocabana Railway from Mayrink to Santos has been completed as far as Rio dos Campos, 95 kilometres from Mayrink.

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Developments in Diesel Services

ONE of the objections raised to the earlier types of diesel-driven high speed railcar units was the inflexibility of their accommodation, as compared with that of the steam-hauled services. It was pointed out at the time of the introduction of the L.N.E.R. Silver Jubilee service, that full restaurant car accommodation, together with nearly 200 passenger seats, were provided in the latter's seven-coach streamlined formation, as compared with 102 seats only in the two-car Fliegende Hamburger unit in Germany, which may be regarded as the world's pioneer in high speed diesel-driven rail transport. But, as we pointed out at the time, diesel transport was then, as, indeed, it still is, in its infancy, and in a single year remarkable advances have been made. As described on page 923 of this issue, a beginning has been made in Germany with the working of diesel railcar sets as multiple-unit trains. From May 15 the Fliegende Kölner will start out of Berlin as two units coupled together, which will part company at Hamm, one taking the original route via Essen and Düsseldorf to Cologne, and the other travelling to Cologne over the shorter Wuppertal route; this will both reduce the travelling time between Berlin and Cologne, and also spread the facility of this high speed communication with Berlin over a large area of Westphalia. What is more, the combined train will cover the 267·4 miles from Berlin (Zoo) to Hamm in 3 hr. 17 min., including the Hanover stop, at an overall average of 81·4 m.p.h. To equal this world's record, the Silver Jubilee of the L.N.E.R. would require to cover the almost precisely equal distance of 268·3 miles from King's Cross to Newcastle in 3 hr. 18 min., including the Darlington stop—an acceleration of 42 min. on its present timing. Even allowing for the various service slacks on the L.N.E.R. route, and the heavier gradients of the latter, it is clear that, in the matter of speed, the multiple-unit German trains, with over 200 seats (though still not with full restaurant accommodation but only light buffet facilities), have a considerable advantage.

In America, however, little limit is being set to the size of the diesel-driven trains which have been built or are in course of construction. Six-car trains, with sleeping, dining, and observation cars, such as the City of Portland, are already at work, and nine-car units are building. Not only so, but the objection of inflexibility no longer holds. The latest Union Pacific train, which has not yet taken the road, will comprise an independent power unit, with twin articulated combinations of cars, whereby any articulated unit of two cars can be withdrawn from the train should the traffic offering fail to justify its inclusion. Or, should a defect call for the withdrawal of any unit from the train, it will be possible to switch in a reserve pair of cars, just as with an ordinary steam-hauled train. Whether the light-weight construction which until now has been one of the principal assets of the streamlined diesel-driven units will be realised to the full in these conditions, no less than the effects of the streamlining itself, remains to be proved. Similarly the Gulf, Mobile & Northern has deviated from the principle of articulated construction in order that an additional car may be inserted in or withdrawn from one of its three-car diesel-driven trains whenever desired.

Conversely, it may be noted that on the introduction into regular service in Germany of the streamlined 4-6-4 tank locomotive and four-car train that figured in the recent railway exhibition at Nuremberg, although claims have been made that this could take the place of any of the existing diesel-driven railcars when the latter were off for repairs, and work to the same timings, the speeds now to be scheduled for the former are considerably below the diesel standard. It is to make four daily journeys, two in each direction, between Berlin and Dresden, the fastest of which is booked at only 69·8 m.p.h., as compared with the general level of from 75 to over 80 m.p.h. with the diesel railcar services. Similarly, the introduction into daily service of the streamlined German 4-6-4 express locomotive which has been credited with a maximum speed of 120 m.p.h. is not, as at present announced, to be accompanied by any acceleration of the non-stop trains which it will work between Berlin and Hamburg, the fastest of which, on the westbound run, is timed at 69·4 m.p.h. For the time being at least, therefore, diesel propulsion appears to be established in Germany, notwithstanding the advances that have been made in that country in the technique of streamlined steam locomotive construction, as the preferable method of operating ultra-high-speed train services.

In America, while some very attractive relative cost figures have been got out in favour of diesel units, it is

admitted that fixed charges arising out of the initial investment have not been included, because representative figures for depreciation, maintenance, and so on, cannot yet be assigned with accuracy, and they may considerably influence the calculation. Further, it is realised in America, where a generous loading gauge has permitted the construction of cars with roomy internal dimensions, that the ultimate reaction of the public to the space limitations of the diesel-driven units has yet to be determined. Many remain of the opinion that the long-distance passenger will require more commodious accommodation, both by day and by night, if the diesel-driven trains are to receive continued patronage. It may be possible to provide it and still to retain diesel propulsion; but much more experience will be required of relative constructional and operating costs in these circumstances before any decisive judgment can be reached as between diesel and steam advantages for long-distance high speed work.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Pennsylvania Railroad and its Dividend Record

Philadelphia, Pa., April 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—May we remind you that the Pennsylvania Railroad will tomorrow (Monday, April 13) celebrate its 90th birthday. On April 13, 1846, Governor Francis Rawn Shunk in the Capitol at Harrisburg signed the act of legislature of the Commonwealth of Pennsylvania incorporating the Pennsylvania Railroad Company. The act contained provisos that $3,000,000 of capital stock must be subscribed with 10 per cent. actually paid in on each subscription, and that on or before July 30, 1847, $1,000,000 must be paid into the company's treasury on stock subscriptions and 30 miles or more of line placed under contract for construction. Despite much scepticism and even gloomy predictions of failure, these conditions were met by the patriotic response of citizens of Philadelphia and other commercial centres of the state, and on February 25, 1847, Governor Shunk issued letters patent rendering the provisions of the act operative. The preliminary work of building was begun the same year and was pushed forward with great rapidity.

Through all-rail service between Philadelphia and Pittsburgh was established December 10, 1852, in the first year of the administration of John Edgar Thomson, the railroad's third President, who had for a number of years previously been its Chief Engineer and had located and supervised the construction work. At first the line of the old State-owned Allegheny portage railroad, with its eleven inclined planes, was used to cross the Allegheny mountains. On February 15, 1854, just a few days more than two years after President Thomson took office, the Pennsylvania Railroad's own division across the Alleghenies was completed and service was established into Pittsburgh all the way over its own rails. The Pennsylvania was the first railroad to be built from the Atlantic seaboard to Pittsburgh. By 1857 the traffic and earnings of the Pennsylvania Railroad had expanded so soundly that it was enabled to purchase from the State of Pennsylvania the entire Main Line of Public Works, through which Philadelphia and Pittsburgh had been connected by a State-operated transportation system, consisting of alternating canals and rail lines. The properties were paid for in annual instalments over a period of about thirty years and the total cost to the Pennsylvania Railroad, including all items, exceeded $15,000,000. The state was relieved of a liability which had cost it over $40,000,000.

While the original purpose of the Pennsylvania Railroad was to connect Philadelphia with Pittsburgh, and the head of navigation on the Ohio River, by a through rail line, and thus conserve to Pennsylvania's chief cities their share of commerce with the New West, it was foreseen long before the through line was opened that the west would be developed not by water transportation but by railroad. Accordingly, even in that early day, the Pennsylvania's management was planning subsidiary lines to Chicago and St. Louis, as well as to the Ohio river border cities and northward to the lower Great Lakes. In that way the main skeleton of the present Pennsylvania Railroad system was beginning to take shape before the first train pulled into Pittsburgh over its own rails.

With the payment of the 203rd dividend on February 29 this year, the Pennsylvania Railroad has established a record of 89 years of continuous return to its stockholders. From May, 1848, to November, 1855, interest was allowed on the amount paid in on the stock. In May, 1856, dividend No. 1, at the rate of 4 per cent. was declared out of earnings. Dividends have been paid in every subsequent year, at various rates according to business conditions, traffic and earnings. The total dividends on Pennsylvania Railroad stock so far exceed one billion dollars and the unbroken record of a return to stockholders for 89 consecutive years is the longest of any railroad in the world. In the same period it is estimated that this railroad has paid out over thirty billions of dollars in wages, taxes, the purchase of fuel and supplies, bond interest and other fixed charges, and in the development of its facilities to encourage the healthy growth of industry and commerce throughout its territory.

Yours faithfully,

THE PENNSYLVANIA RAILROAD COMPANY

[Without belittling the wonderful dividend record of the Pennsylvania Railroad Company, we would point out that in England the Great Western Railway Company has made a distribution on its ordinary stock every year from 1840 onwards to date—a period of 96 years inclusive. The distribution for the second half of 1866 and the whole of 1867 was, however, paid in preference stock.—ED. *R.G.*]

Signal Box Clocks

The Synchronome Co. Ltd.,
32 & 34 Clerkenwell Road,
London, E.C.1, April 29

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—*Apropos* your reference to the above in your account of the Shrivenham accident, I crave space for a brief note. In forty years' experience as a pioneer and champion of accurate time-keeping, I have found the railway companies slow to avail themselves of improved methods, and I suppose it will be many years before they help themselves to the new revolution in time-keeping; I refer of course to the a.c. electric supply of the Grid.

Electrical impulse dials are required for the major main-line stations, but since I so equipped Nottingham in 1903, Waterloo in 1910, Broad Street and Euston in 1911, and hundreds abroad, the number of such installations has hardly risen to a dozen in this country.

Signal boxes are too far apart to justify their inclusion in circuits of electrical impulse dials, but wherever a box is lighted by a.c. current on the Grid, it appears to be folly to neglect to instal a Synchronomains clock with a jump centre-seconds hand. Is it realised that, thanks to the free pendulum at Greenwich Observatory, the six dot seconds wireless signals and our 150 master clocks in power houses, the station engineers have now become the time-keepers of the nation, and that wherever electric light penetrates, it carries with it Greenwich mean time, accurate to within a few seconds?

Yours faithfully,

F. HOPE-JONES, M.I.E.E., F.R.A.S.
Managing Director

PUBLICATIONS RECEIVED

Fenland Rivers. By Iris Wedgwood. London, 1936: Rich & Cowan, Limited, 25, Soho Square, W.1. 10 in. × 7½ in. × 1½ in. 163 pp. and maps. Drawings by Henry Rushbury, R.A. Price 7s. 6d. net.—From time to time there arises in this country a champion of our waterways. Mr. A. P. Herbert, for example, although he has of late gained fame as a defender of other fluids, is not averse to water as a medium of transport, and is sometimes to be seen progressing through the country in his own version of the State barge of which he deplores the disappearance from the Thames. Nor must we forget the Automobile Association, whose enamelled signs at bridges bring a wealth of new and musical river names to the notice of those who pause to read them, and are a reminder that England has an aquatic geography repaying study because so much of it is unfamiliar. And now there is this book by Lady Wedgwood, which traces the course from source to sea of four East Anglian rivers, the Ouse, Nene, Welland, and Witham, and their tributaries. It is the easiest and most natural transition from the study of a river to the history of the country through which it flows. Particularly is this so in the Fen Country, where so many quiet towns today once counted their water trade as their title to celebrity. But if Wisbech no longer has its business with the Hansa towns, and the quays of Boston now handle as much coal and timber as once they did of imported wine, there has been no decline in their status as the market places of the surrounding country. It is necessary only to read the author's description of a country town "agog with farmers" to appreciate that their vitality in this respect has in no way diminished.

We should be liable to misinterpretation if we described this as a scholarly book, although the adjective at once occurred to us on noting its richness of historical allusion and its appreciation of architecture. Yet scholarly implies a detachment from life which is the last thing to be found in these intensely human pages. The author looks with as much sympathy and humour upon a country wedding of the twentieth century as with perception upon an ancient document. Both are treated in her pages with understanding and humanity. Finally, when she has led us to the estuaries of her four chosen rivers, she devotes chapters to the marshes and the wolds.

Custom relegates remarks upon the illustrations and production of a book to the final paragraph of a review, but it is with difficulty that we have foreborne so long to mention the forty-eight wash drawings by Mr. Henry Rushbury, R.A., which, in conjunction with the text, complete the reader's spiritual translation from his armchair to the Fen Country. The large-scale maps of Lincolnshire and Cambridgeshire will assist him to perform the same journey in person as soon as opportunity offers, and give a practical conclusion to this handsomely bound and produced book.

"Illustrirte Zeitung": 100 Years German Railways. Leipzig: J. J. Weber. 15 in. × 10¾ in. 78 pp. Price, RM. 1·50.—The famous *Illustrirte Zeitung*, the oldest German illustrated weekly, recently issued a specialGerman railway centenary number and has now produced an edition of 8,500 copies in English. As with all the centenary literature, much of which we have reviewed in these columns, it is attractively produced. The particular angle from which the subject has been approached is naturally that of illustration, and the early files of the *Illustrirte Zeitung* have produced a number of interesting subjects which, so far as we are aware, have not previously been used in connection with German railway centenary literature. Introductory messages (with portraits of their writers) appear from Freiherr von Eltz-Rübenach and Dr. Dorpmüller, and Reichsbahnoberrat Dr.-Ing. Sommer contributes in the first article a brief but lucid account of the rise of the railway system and the difficulties which resulted from lack of political unity in the Deutsche Bund, which the Zollverein solved only in part. The remainder of this special number is devoted to a series of well-illustrated articles on various aspects of the Reichsbahn of today.

London Transport Underground Guide. Published for the London Passenger Transport Board by Index Publishers (Dunstable) Limited. 6¾ in. × 2¼ in. 240 pp. Folding map. Price 2d.—London Transport has collected the timetables of all its railway services into a single pocket guide (as briefly mentioned in our news columns last week). A long-wanted revision of the Metropolitan Line tables has been effected, the Uxbridge and Stanmore branches now being shown together with the Metropolitan & G.C. Joint line as far as Rickmansworth and Watford. At the same time, all trains to and from Baker Street, including those calling at all stations and terminating at Wembley Park, are given in the same table as London Transport and L.N.E.R. trains proceeding to the outer suburban destinations, Aylesbury, and beyond. The latter services are also set out in a separate table showing all stations between Harrow and Verney Junction (except those on the Uxbridge and Watford branches), and the principal stopping places between Harrow and Aldgate. A further convenience is that the through Piccadilly Line services to and from Uxbridge are now shown in outline in the Metropolitan Line table. All these changes reduce the amount of searching necessary, and, in consequence, the chance of overlooking available facilities. A folding map shows the Underground lines as a whole, and the interchange stations of the central area on a larger scale.

The reference notes are reduced to a minimum, and the board again carries its policy of simplification to the extent of omitting "a.m." and "p.m." from the tops of the columns. "Morning" and "afternoon" are placed at the head of the tables, or indicated by light and heavy type. Uniform adherence to one principle in this respect would be an advantage. Only first and last trains are given for some dense local services, but longer distance through routes are shown in full. Thus, every train is recorded between Mansion House, Hounslow, Ealing and Wimbledon, accounting for nearly fifty pages of the guide, while the complete Piccadilly–Hounslow–South Harrow service occupies 32 more. The Bakerloo service between Watford, Harrow, and the Elephant is also shown in full. Non-stop codes are given in the reference notes, and these will doubtless be the most frequently consulted feature of this exhaustive compilation.

Summer Holidays Abroad.—The facilities offered by Thomas Cook & Son Ltd. for summer holidays throughout Europe and further afield are too well known in general outline to need recapitulation here. In the 1936 edition of "Summer Holidays Abroad" they are very fully set out, with numerous illustrations and maps. The holidays by special train in Switzerland, Spain, and Central Europe continue to be a prominent feature, with the added attraction this year of reduced rates in several cases. At last, too, we see a firm of tourist agents offering free travel, an excellent idea which should surely have been thought of before. Cook's patrons staying in Lucerne are now presented with a seven-day season ticket on the lake steamers, valid for any number of journeys during its currency. A schedule of pleasure cruises by well-known liners is given from May 1 to September 30, while those who are prepared to accept slightly less luxurious accommodation at sea are catered for by some very reasonably priced voyages to the Scandinavian countries.

Aluminium Data.—We have received from the Northern Aluminium Co. Ltd., Bush House, Aldwych, W.C.2, a set of new and revised pages for the "Noral Handbook" (reviewed in our issue of November 29, 1935). The most noteworthy addition to the data furnished in the first issue of this loose-leaf catalogue is the specification of a new aluminium-magnesium-chromium alloy of the non-heat-treated type, which has high resistance to atmospheric and sea water corrosion. The firm has now added 250 extrusion dies to its already large stock, while the range of extruded sections now allows a maximum overall dimension of 8 in. An addition to the handbook is Section D, giving weights of tubing, and various new alloys are now available to B.S.I and D.T.D. specifications.

THE SCRAP HEAP

QUINTUPLETS

The five little year-old Dionne girls have brought about such an increase in railroad and passenger traffic to and from Callander, Ont., that a new railroad station is being built.—*From the "Erie Railroad Magazine."*

* * *

How many passengers, looking at their railway tickets, think of them as being composed of the tiniest of wooden splinters, or realise that originally they were part of a giant tree felled in the vast lumber woods of the empire, to be converted into wood pulp, in which form the material reaches this country? But this wood origin is very evident in the case of tickets which have remained in the booking-office racks for a good length of time, as they, too, become hardened and seasoned in the same way as does wood.—*From "Some Little-known G.W.R. Facts and Figures" by C. S. Lock, in the "G.W.R. Magazine."*

* * *

A ??? TYPE LOCOMOTIVE

"What," asks a correspondent, "would be the correct definition of a 4-6-0 type locomotive after the hind coupling rod on one side had been removed, the engine thus being six-coupled on one side and four-coupled one the other?" We should regard it as a nondescript type and as likely to become even more so if running under load were persisted in with such a lop-sided arrangement.

* * *

STEPHENSON RAIL FOR SOUTH KENSINGTON

A 15-ft. length of rail designed by George Stephenson over 100 years ago for the Leicester & Swannington Railway, now part of the L.M.S.R. system, has been presented to the South Kensington Science Museum by Sir Josiah Stamp, Chairman of the L.M.S.R. The rail, which once formed part of the original Leicester & Swannington track, was found at Ashby-de-la-Zouche; it is wrought iron, of fish-bellied type, and had an original weight of 35 lb. a yard.

* * *

A CHINESE APPRECIATION

The following appreciation, from its own correspondent in Luchowfu, appears in a recent issue of *The North China Daily News*:—"Certainly the most delightful thing one can write about is the railway. Those of us who have been compelled to travel by the hideous, hateful, filthy and unsanitary methods of the past no longer scorn the "merely mechanical so-called blessings of our materialist civilisation." The long low whistle of the huge engines and the rattle of the big wheels constitute music equal to Beethoven or Bach, because of what they signify in the elimination of human misery and inconvenience. One would forego a whole lot of art and poetry if necessary in order to exchange a 100 mile journey on a wheelbarrow in a January blizzard for one of these warm steady railway carriages.

"The new railway line from Wuhu to the Hwai River known as the Hwai-Nan Railway is such a success that even its promoters are astonished. It was to be merely a coal carrying railway, but now that it is in operation the passenger traffic is simply amazing." What a pity such enthusiasm for rail transport does not obtain in other countries!

* * *

One of a set of three recently issued Belgian stamps commemmorating the centenary last year of railways in Belgium. The 10c. variety (reproduced) is rose; the 20c. mauve; and the 30c. sepia

One Hundred Years Ago

Extracts from the May, 1836, issue of "The Railway Magazine" (afterwards "Herapath's Railway Journal") and the oldest constituent of THE RAILWAY GAZETTE

London & Croydon Railway: Court of Compensation.—A court was held yesterday, at the Horns, Kennington, to award compensation to the proprietors of the Croydon Canal, the greater part of which property is intended to be taken, under the provisions of the Act of Parliament, by the Croydon Railway Company, for the purpose of forming the line of railroad. The railway company offered £35,000 as compensation, but this sum was rejected by the Croydon Canal Company. Several witnesses were examined; amongst others, Mr. Rennie, Mr. Tite, and others, who gave it as their opinion that a greater compensation would be necessary to meet the justice of the case. The case was adjourned till this day.—"*Morning Chronicle,*" *April* 12.

The proceedings were resumed yesterday. Several witnesses were examined in behalf of the railroad company; when the jury, after a consultation of an hour and a half, delivered a verdict in favour of the claimants, for buildings and land in Surrey and Kent, for £40,250, and also a nominal verdict of one shilling for profits.—"*Morning Chronicle,*" *April* 13.

What—only one shilling for the profits of a concern whose property was worth £40,000!! This must have been a very lucrative concern. It is lamentable it should have been given up.—ED. *R.M.*

London, Salisbury, Exeter, Plymouth, and Falmouth Railway.—On referring to this important undertaking last week, we alluded to its terminating at St. Just, instead of Falmouth. It will now be seen, on referring to the advertisement and engraved plan, that the company has altered its original line for one that shall traverse the back-bone of Cornwall, taking nearly a straight course from that city to Truro, and branches then to Falmouth and Redruth, whence it may be extended to Penzance. It is, we conceive, the best plan that could be adopted, and the speculation seems to us one fraught with so many benefits to this country, that we have no hesitation in according it to our hearty support. We have not space this week to say all that we wish on this herculean work, but we earnestly recommend it to the dispassionate consideration of our numerous readers, that, if they should view it in the same light that we do, they will give it their substantial support, that Cornwall may partake of those advantages which railroads are so admirably calculated to confer on the country; and we do this without hesitation, for we are informed, on respectable authority, that this undertaking is in the hands of men of powerful talent, great wealth, and unquestionable integrity—determined by uniting their efforts to carry out the beneficial objects they are pledged to attain, by using every legitimate exertion for its success; and as it is the universal feeling that success is not only desirable, but practically attainable, they ask for co-operation and confidence, which will, and must be obtained more and more, as the views of the company are developed, when they will be believed to be what they are, viz., bona-fide and in earnest.—*Falmouth Packet.*

Railroads in Austria.—The iron railroad to Galacia is to be commenced in April. It is hoped that it will be completed as far as Brunn in eighteen months. The journey from Vienna to Brunn with post horses now takes fifteen hours, then it will require only four hours. The dearness of provisions, which has been much felt at Vienna, will be remedied in proportion as the railroad is laid down. When we reflect that potatoes cost in Galacia only one-third of what they do at Vienna, and that all the productions of the sort are in the same proportion, we can infer what advantages the capital will derive from the railroad.—*Allgemeine Zeitung,* April 1.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

SOUTH AFRICA

Construction of New Line

Good progress is being made with the 24-mile new construction from Postmasburg to Lohathla, which is in easy country, necessitating no bridges of any size. To hasten the work, it is let in sectional contracts, the platelaying also being done by contractors. Over 10 miles have already been completed and the whole line is expected to be open in July: it is considered as an urgent measure to tap the manganese deposits in the area traversed.

Cape Town Port Extension

The "southern modified scheme," previously referred to in these columns, for the Cape Town harbour extension works is now well in hand. It consists mainly of a new mole and return head having an aggregate length of over 5,500 ft. on one side, and a new quay wall and return head, totalling approximately 4,000 ft. in length, on the other side. The width of the entrance to the new basin thus enclosed, measured between the return heads, is 400 ft., and the extent of the basin is 196 acres. The *Empress of Britain* was recently accommodated in the new basin, which is adjacent to the old Victoria basin.

Port Elizabeth and East London Developments

At Port Elizabeth also, the new harbour is in the form of a great basin, exceeding 300 acres in extent, enclosed by breakwaters and quays, over 1,000 ft. of the latter having already been completed. Four berths together with their sheds, cranes, and sidings have been finished, and work upon a fifth is well in hand. The turning basin at East London is also progressing satisfactorily, as are also the breakwater and quay wall extensions. Altogether the S.A.R. & H. harbour improvement works are already taking shape so rapidly, that the full extent of the added facilities they will provide can be appreciated. Now that the Union is going ahead so fast and developing in every way—as is reflected in the continued satisfactory railway and harbour returns—these new port extensions will soon be an urgent necessity. Their completion will, however, make adequate provision for, at any rate, the near future, and will provide accommodation worthy of this go-ahead Dominion.

ARGENTINA

Maize Harvest: First Official Estimate

The first estimate of the forthcoming maize harvest, issued by the Ministry of Agriculture on March 21, puts the probable total yield at 9,650,000 tons, a decrease of 1,830,000 tons (or approximately 16 per cent.) as compared with last year, and 1,035,829 tons (or 12 per cent.) higher than the average for the last 5 years, as shown in the appended table:—

Year	Tons
1930–31	10,660,000
1931–32	7,603,391
1932–33	6,801,504
1933–34	6,525,960
1934–35	11,480,000
Average:	8,614,171

In local grain circles, however, the above forecast, which is merely preliminary, is considered too low, and it is believed that the actual production will be found to be considerably higher.

INDIA

Eighth Inter-Railway Athletic Tournament

At the eighth Inter-Railway Athletic Tournament held at the Irwin Stadium, Delhi, under Olympic Association auspices and rules, three all-India records were broken and five railway records were lowered, and the standard of the performances was generally high. In all 129 competitors representing nine railways and the Railway Board took part, the North Western with 32 marks easily leading the South Indian Railway team, which was second with 49½ marks. To give some idea of the standard displayed it may be quoted from the *North Western Railway Magazine* that Whiteside (N.W.R.) won the 220-yd. final heat in 21·8 sec. and the 100-yd. in 9·9 sec. The one-mile relay race was won by the N.W.R. team in 3 min. 41·6 sec., 3 sec. inside the Indian record. Lewis of the B.B. & C.I. covered the quarter-mile in 52·6 sec.; also the shot was put 40 ft. 1 in. and the 120-yd. hurdles race was won in 15·7 sec.

Institution of Locomotive Engineers' Centre

The fourth annual general meeting of the Indian and Eastern Centre of the Institution of Locomotive Engineers was held in Agra on February 7, with Mr. D. Cardew, Chief Mechanical Engineer of the North Western Railway in the chair. In his opening speech Mr. Cardew remarked upon the encouraging increase in the number of members and growing interest in locomotive engineering in India. He then paid a warm tribute to the late Mr. Shove, by whose death they had lost one of their ablest members and the first real exponent of grease lubrication for Indian locomotives: he also voiced the sympathy of the Centre with Mr. Shove's relatives.

Continuing, the chairman welcomed the fact that no fewer than eight original papers had been read before the Centre during the past year, this showing a healthy willingness on the part of members to share their experiences and also proving that they were not afraid of criticism. He hoped others would come forward with more papers in the near future.

The election of officers for the ensuing year concluded the proceedings: Mr. L. N. Flatt, C.M.E. of the Eastern Bengal Railway, being the new Chairman, and Mr. Clarke, of the G.I.P.R., the new Honorary Secretary.

FRANCE

Paris Metro Developments

By the end of this year the Luxembourg terminus of the Paris-Orleans Railway will be transferred to the Metro administration, which will by that time have completed the electrification of the line therefrom to Sceaux-Robinson, and its branch from Bourg-la-Reine to Massy-Palaiseau (19·7 km. in all). The transfer of these lines from the Orleans company to the Department of the Seine was approved by an Act of April 10, 1932, and a Decree of August 25 in the same year confirmed that they should be worked under a concession by the Metro, both changes to become effective when electrification and associated works were completed.

A connection between the newly electrified lines and the present Metro Line 5 (Nord-Etoile) will be made at a new station to be constructed on Line 5 between Raspail and St. Jacques. The Decree of August 25, 1932, also provided for an eventual extension from the Luxembourg terminus to St. Michel, on Line 4 (Clignancourt-Porte d'Orléans).

Extensions in 1936 and 1937

Further Metro extensions, to be opened this summer, are a new line (No. 14) from Bienvenüe (Line 5) to Porte de Vanves, and the extension of Line 11 from Porte des Lilas to Mairie des Lilas.

Next year, in connection with the opening of the Paris Exhibition, the following lines will be brought into use on May 1: (*a*) Duroc-Bienvenüe, permitting of through running from Invalides to the new Bienvenüe—Port de Vanves line already mentioned; (*b*) an extension from Jussieu to Gare d'Austerlitz, also to be used by a through service from Invalides; (*c*) La Motte-Picquet to Grenelle and Porte de Sèvres; and (*d*) La Motte-Picquet to Duroc, which will connect the line from Porte d'Auteil with the Duroc-Porte de Vanves and Duroc-Gare d'Austerlitz services.

Accelerated Services

Meanwhile, by improvements in motive power, signalling, and alignment, the Metro has increased the average speed of its services (including stops) over the whole system from 13·3

m.p.h. on January 1, 1933, to 13·8 m.p.h. on January 1, 1936. Further accelerations on Lines 7 and 8 in February this year, and on Line 9 in March, have brought the present average up to 13·9 m.p.h. Omitting the rush hours from these calculations, curtailment of station stops to an average of 10-11 sec. gives an average speed of 14·1 m.p.h.

Commenting upon these figures, the French journal, *Transports*, remarks that it is now possible to reach the centre of Paris from any point on the circuit of the old fortifications in 15 min. In the near future, too, the company intends to place lighter train sets in service on Line 2 (Porte Dauphine—Nation) and Line 5 (Etoile-Italie-Gare du Nord), and so raise the average speed at normal periods to the neighbourhood of 14·9 m.p.h. and at rush hours to 14·3 m.p.h.

The Annemasse-Sixt Railway

The Annemasse-Sixt line of the Chemins de fer Economiques du Nord serves a number of well-known winter sports centres, and at week-ends, and particularly on Sundays, deals with large numbers of skiers from Geneva, who proceed to and from Annemasse either by the P.L.M. branch line or by the Geneva electric tramways. On February 2 last, through winter sports trains began running between Geneva and Samoëns, using the Geneva-Annemasse tram-route. The overall time from the centre of the city to Samoëns by these trains is 2 hr. 6 min., whereas before electrification of the French line the run from Annemasse to Samoëns alone took from 2½ to 3 hours.

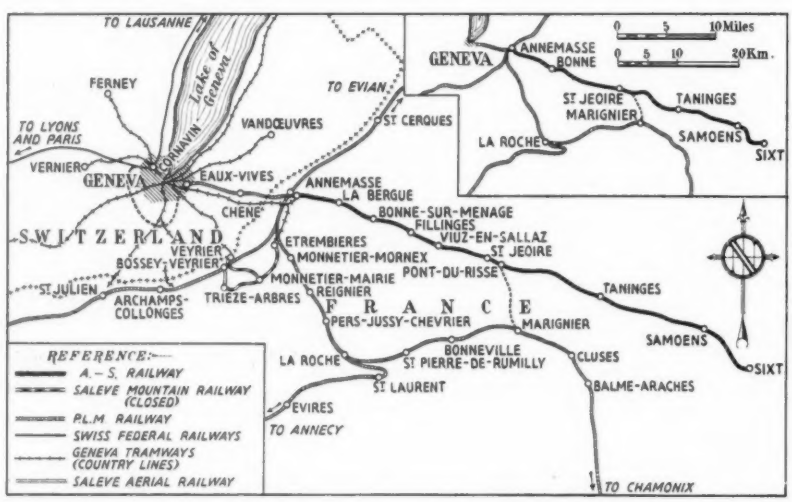
The original line extended from Annemasse to Samoëns, with branches from Bonne to Bonneville and from Pont-du-Risse to Marignier, and was worked by enclosed steam locomotives of tramway type, hauling trains of four-wheeled coaches, some of them semi-open. The rolling stock and track were in a very bad condition, and a bus service was substituted while the line was partially closed for reconstruction and electrification. The main line, with the Samoëns-Sixt extension, was opened with electric traction on August 25, 1932; a bus service was retained between St. Jeoire and Marignier, but the Bonneville branch was abandoned. Passenger traffic accounts for 65 per cent. of the total receipts of the system, and a considerable portion of this accrues from summer and winter tourist traffic.

The Sixt line is of metre gauge, with 40 kg. rails. Alternating current at 12,000 V. is supplied by the power station of the Société d'Electro-Chimie et Electro-Métallurgie, near St. Jeoire, to substations at Fillinges and Taninges, where it is converted to 1,500-V. d.c. and supplied to the overhead catenary line. The motor-coaches weigh 32 tonnes, have 97-h.p. motors, and can attain a speed of 70 km. (43·5 m.) p.h., though the maximum speed in service is usually about 50 km. (31 m.) p.h. These coaches contain first and second class compartments, seating 36 passengers with space also for mails and luggage. The newer type of trailer weighs 12·5 tonnes and seats 34 passengers. For peak traffic, semi-open cars have been built by welding together the bodies of two of the old four-wheeled coaches and placing them on bogies. Goods trains are hauled by 28-tonne motor-vans.

Closing of the Salève Mountain Railway

On February 29 last, the Salève Railway, near Geneva, was finally closed to traffic. This small system, the first portion of which was opened in 1893, had the distinction of being the first electric rack railway. It consisted of two lines, one from Etrembières, south of Annemasse, to Treize-Arbres, a short distance from the summit of the Grand-Salève, and another (opened in 1894) from Veyrier, joining the first line at Monnetier-Mairie. The railway was of metre-gauge, and the Abt rack system was used, with a double rack on the steeper portions and single elsewhere; the maximum gradient was 1 in 4. Power at 600 V. d.c. was supplied through a third rail. The motor-coaches were of compartment type, seating 32 passengers and with standing room for 8 on the open platforms.

The Etrembières-Monnetier section was closed early in 1932 and a bus service from Annemasse substituted. With the opening of an aerial cable line from Veyrier direct to Treize-Arbres in the same year, traffic on the rack railway began to decline rapidly, as the journey takes only 5 min. by the aerial railway as against 55 min. by the old line. The construction of excellent motor-roads to the summit gave the death-blow to this pioneer system, and a "de luxe" bus service has been running since March 1 between Veyrier and Treize-Arbres. Although visitors from Geneva provided the greater part of the traffic, the Salève Railway was situated entirely in France.



Sketch map (not to scale) of the Annemasse-Sixt and other private railways connecting with the P.L.M. and the Geneva tramways, with key map to scale

THE FAR EAST

Szechwan-Kweichow Railway

A company to be known as the Szechwan-Kweichow Railway Company is to be formed with a capital of $20,000,000 for various railway constructions, beginning with the Chungking-Chengtu line. The project has the approval of the Ministry of Railways and the Provincial Governments each of which will take up a number of shares. The total capital will be 200,000 shares issued at $100 each.

Completion of Canton-Hankow Platelaying

The linking up of the last rails by the platelaying gangs, enabling through running of ballast trains between Lokchang and Lukow—or indeed Canton and Wuchang (opposite Hankow on the Yangtze), has now been accomplished. The opening of this important through route—illustrated and described in our issues of March 9, 1934, and February 7 last—for public traffic should, therefore, take place before long.

South Manchuria Railway Loan Issue

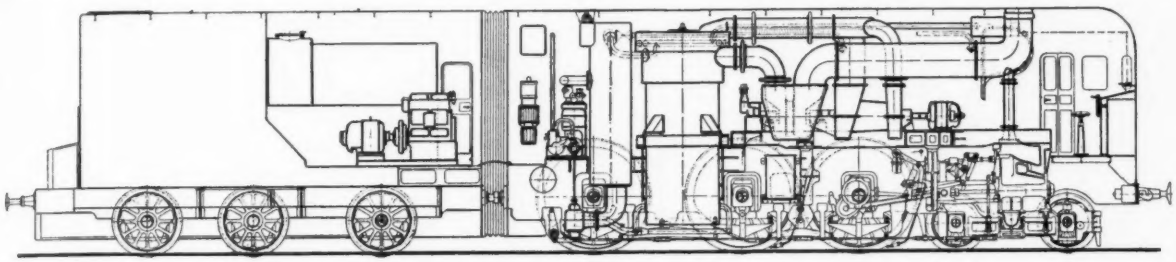
The board of directors of the S.M.R. has decided to issue in August debentures to the value of Y. 110,000,000. Y. 50,000,000 of this issue are for conversion of the loans then due for redemption. The formal approval of the Ministry of Finance of the Japanese Government has been asked for the increase of the present limit for the company's debenture issues to double the paid-up capital. The capital of the S.M.R. is Y. 800,000,000, of which Y. 537,620,000 is paid up.

INCREASING THE POWER OF STEAM LOCOMOTIVES

The Velox system developed by Brown Boveri & Company is claimed to give a more powerful engine whilst restricting its size and weight

MANY minds are constantly at work in the endeavour to improve certain characteristics of the steam locomotive, and much thought and investigation has been given to the possibility of altering some of the fundamental bases of design. It is realised that the modern high-powered locomotive, especially that intended for express passenger service of the heaviest kind, has reached proportions which, in many respects, cannot very well be exceeded, whilst the weight factor is becoming a point of growing concern. The very large and high-pitched boilers nowadays necessary represent one of the principal obstacles standing in the path of weight restriction, and the big wheels and long rods used in express engine construction could, it is contended, be dispensed with to advantage if only other principles and methods of driving were adopted.

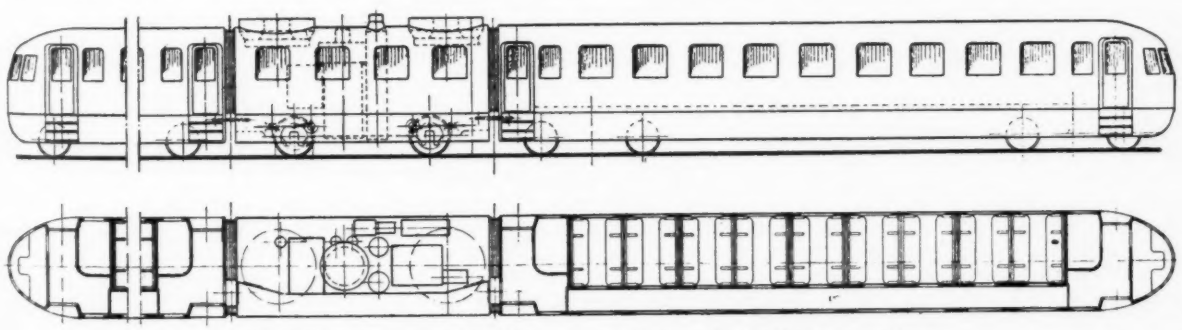
Various designs have been prepared for producing locomotives of greater power without increase in weight or size, among them being the Velox locomotive developed by the firm of Brown, Boveri & Company. It is claimed that the Velox steam generator is exceptionally suitable for locomotives and motor coaches on account of the small space it takes up, its light weight, rapidity in raising steam, and general adaptability to service requirements. This form of construction—although not in the exact form advocated by the originators—is already being taken up in France; the Office Centrale d'Etudes et de Matériel (O.C.E.M.) of the French railways last year placed an order with the Compagnie Electro-Mecanique, Paris, the French concessionaires of Brown, Boveri & Company for a Velox locomotive. In this case, however, an existing locomotive of the 4-6-0 type was to be converted to the new system, the ordinary cylinders and driving gear being retained. The output of this engine after conversion will be raised from 1,500 h.p. to 2,000 h.p. and the moderate nature of the increase is explained by the fact that the same wheels, cylinders, &c., are being used. The increase in output is obtained by a moderate augmentation of the volume of steam produced, and a small increase in the steam pressure. Proposals have been made, however, for locomotives up to 7,000 h.p., using individual axle drive with small vertical and easily accessible high-speed steam engines, which is held to solve all difficulties arising in modern locomotives from boiler layout, long connecting rods, and large wheels.



French 4-6-0 locomotive with Velox steam generator

As shown in the accompanying drawing of the French 4-6-0 locomotive, the Velox steam generator is placed vertically between the second and third pair of coupled axles, being anchored to a strong cast-steel foundation which reinforces the frame of the locomotive. The water separator is also of the vertical type and placed beside the combustion chamber, while the superheater coils are lodged in the evaporating tubes in the combustion chamber. A feed-water heater of the water-tube type is used, suspended horizontally under the locomotive roof casing; a charging set with auxiliary turbine is located above the frames. The pump set comprises the fuel, lubricating, governing oil, feed and circulating pumps, and the axle shafts of the pumps are vertical in order to allow of the circulating pump being carried as low as possible below the level of water in the steam generator. The drive consists of a horizontal shaft steam turbine with geared transmission.

When starting the Velox, the charging and pump sets



1,000 h.p. railcar with Velox power plant and geared steam engines

are brought up to the requisite speed by means of electric motors. These take current from a small petrol-driven generator of 30 kW. carried on the tender. As soon as the Velox begins to deliver steam, the auxiliary turbine takes over the drive, the starting motor of the charging set being automatically cut out, whilst that of the pump set continues to run with the pumps, and acts as a lighting dynamo. The whole plant is in an enclosed housing on the locomotive, and easy of access. The automatic working of the mechanism renders it unnecessary to provide for continuous attendance, and for this reason it was possible to place the driver's cab at the front end of the locomotive.

We also reproduce a drawing of a railcar, the design of which is being worked out for one of the European railways. It provides seating for 150 passengers and is designed for a speed of 130 km.p.h. The driving mechanism in this case is to be a 1,000-h.p. Velox power plant, comprising individual axle-drive through high-speed steam engines.

Grinding Out Rail Corrugations

RESEARCH into causes of corrugation is actively proceeding in America, where, as shown in an editorial note on p. 895, the trouble is assuming serious proportions. In the meantime it is necessary to find means to avoid the necessity of removing corrugated rails from the track after an unduly short life. It is in these conditions that the Lehigh Valley Railroad management has designed and built a rail-grinding unit, which is believed to be the first of its kind to be used on a railway worked by steam locomotives, though the principle of corrugation grinding has been developed fairly extensively on electric tramways. In its general features, the car used resembles a tank car, for water plays a considerable part in the grinding operations; the car is 47 ft. long, and carries a cylindrical tank with a capacity of 5,700 gal. Below the frame there are arranged eight grinding units, four on each side of the car; each unit includes three grinding blocks 10 in. long × 9 in. deep × 3½ in. wide, with one 10-in. × 3½-in. surface in contact with the rail. Each unit thus provides for 2 ft. 6 in. of grinding surface, and all four units along one side of the car for 10 ft. in all on each rail. Two units on each side are mounted in the centre of the car, and a pair, one on each side, between the wheels of each bogie, the wheelbase of which is lengthened to 10 ft. in order to provide sufficient space for the purpose. It is necessary to provide grinding units on the bogies in this way in order to permit grinding to be carried out on sharp curves, where the tangential position assumed by the car frame may carry the centre grinders completely off the rail-head.

When the car is running with the grinders out of action, the blocks are lifted off the rail; in action they are lowered on to the rails, and flooded with water from the car tank for cooling purposes. Lifting and lowering are accomplished by compressed air, applied by air-brake cylinders, 8 in. × 12 in., adapted for the purpose, one such cylinder being located above each of the eight block units. Air is taken directly from the train air line of the Westinghouse brake, and is first introduced into two connected air cylinders, with a capacity of 17·5 cu. ft., arranged transversely across the car at one end. At the point of air introduction two valves are provided, one to reduce the pressure admitted, and the other to cut down the air velocity, so that its sudden ingress may not reduce the pressure in the train line sufficiently to apply the brakes. From the reservoirs the air is piped to the operator's cab, which is at the opposite end of the car, and from there to the grinding units. The bogie and centre units can be operated independently of each other, and the units on one side of the car can be used alone, or both rails can be ground simultaneously, at will; four controls are therefore provided—r.h. bogies, r.h. centre, l.h. bogies, and l.h. centre. Reducing valves allow control of the pressure on each grinding unit, which is indicated by pressure gauges in the control cab, and special valves are fitted to enable the blocks to be brought down on to the rail surface without a sudden impact.

By suitable air-valve control, water is applied automatically from the supply tank, ahead of and behind each unit, directly the units are brought into use; and the water supply is cut off as soon as the blocks are lifted. By careful arrangement of the water passages, the major proportion of the water finds its way directly on to the rail-head. Actually the tank carries considerably more water than is actually needed between the points where water can be taken, the weight of the water being needed to steady the car, and to resist the lifting force exerted by the grinders as they are forced down on the rails. The actual pressure applied is 60 lb. per sq. in. in the cylinders, corresponding to approximately 35 lb. per sq. in. on the grinding blocks. This has been found by experience the most suitable figure for doing the work efficiently when the grinding train (consisting of the car and a caboose, or bogie van) is hauled by a 2-8-2 locomotive—the type usually employed—with an adhesion weight of 67 tons; the drawbar pull needed to move the train when the grinders are in use is equal, it is computed, to that normally exerted on a train of fifty bogie freight cars. The speed of operation which gives the best results is 40 to 45 m.p.h., which is about the same speed of contact as that normally afforded by an emery wheel. Until now, the number of "passes" of the train over corrugated track has varied from 6 to 30, to ensure complete removal, according to the depth of corrugations being dealt with, and has averaged 13; this average permits the rail train to deal with 8 to 9 track miles a day, which in their turn represent the corrugated proportion of the 100 to 125 miles of line over which the train, on the average, will pass while in service.

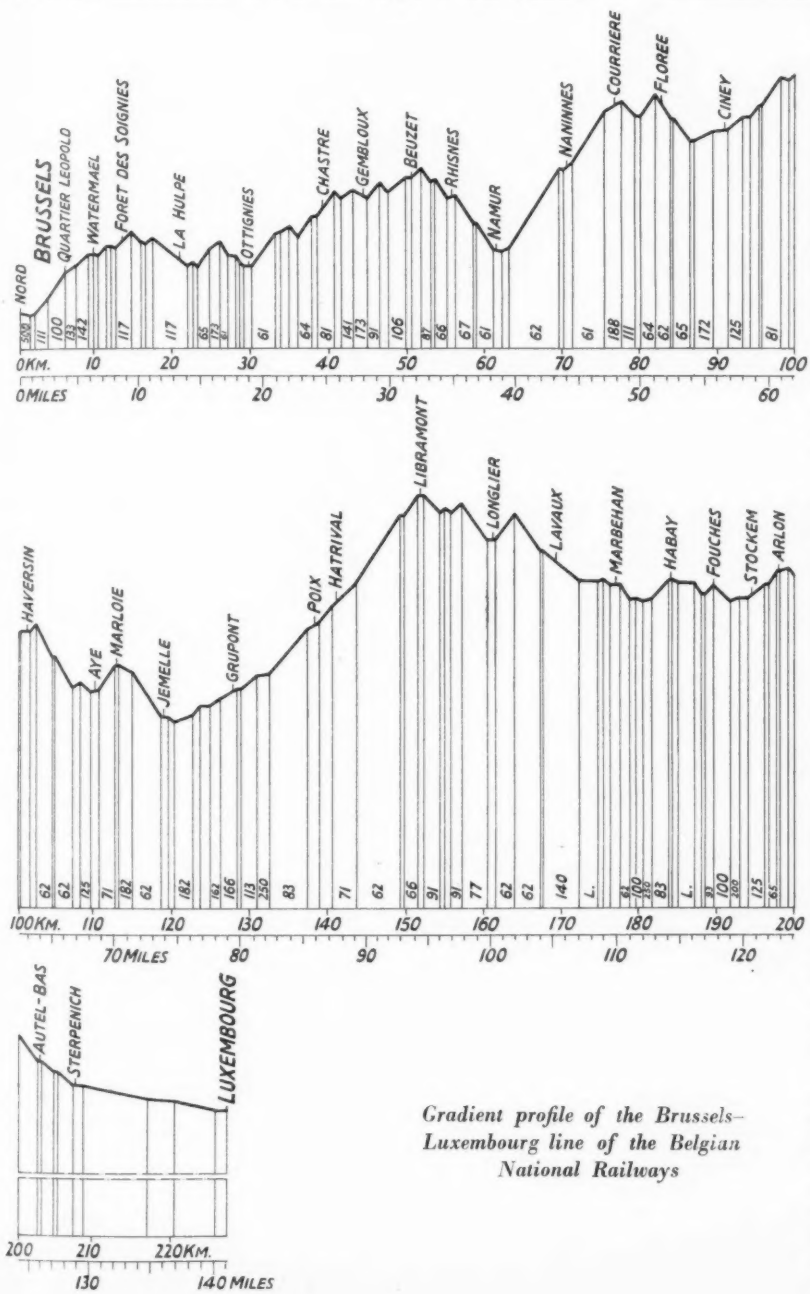
Apart from the train-crew proper, the staff of the car numbers three—an operator and two observers; they are usually accompanied by the supervisor of the district in which grinding is required, or his representative. The operator stations himself in the cab of the grinding car, and the observers take up positions in the centre of the car, one on either side, on the running plates, which are protected by handrailing. Facing forwards, the observers watch such conditions as track alignment, and the position of switch and crossing work and road crossings, giving instructions to the operator, by means of cord and bell signals, as to where the grinding blocks are to be lowered or lifted. Through switches and crossings the blocks are raised, to prevent chipping or breakage, but they are held to the rails over road crossings; on curves of shorter radius than 5 deg., the centre blocks also are lifted, as previously mentioned, to prevent the possibility of their dropping off the rails owing to their chord position in the arc of the curve. An additional advantage of the grinding has been that of smoothing the ends of rails which have been built up at the joints by welding. As yet the Lehigh Valley car is regarded as only in a primary stage of development, and it is hoped later on to develop a better type of grinding block; nevertheless, it performs its work very creditably, and leaves the running surface of the rails in a perfectly smooth condition.

BELGIAN LOCOMOTIVE PERFORMANCE

The work performed by the locomotives of the Belgian National Railways ensures a fast and punctual train service

BELGIAN locomotive performance is of a high standard, for, although train loads on some of the chief expresses have tended to drop, the schedules have been greatly accelerated in the last three years. Features of the main line work are the consistently good locomotive work, raised to peaks when lost time has to be regained, and the remarkably high standard of punctuality. Since the introduction of the new Type 1 four-cylinder simple Pacifics the principal trains have been hauled with a lower coal consumption and a higher all-round efficiency than with the older Type 10 Pacifics, which, however, still do much of the heaviest work.

Main line stock in Belgium is heavier than in England, and approximates to the standards generally found on the Continent. The latest all-steel Belgian stock used on the international trains and on the main interprovincial trains tares 43 to 47 tonnes, but the international trains generally include sleeping and dining cars weighing 48 to 57 tonnes. Weights marked on Belgian carriages in round numbers, *e.g.*, " 30 T " (followed by the number of passengers for whom seats are provided) indicate the gross weight of the fully loaded vehicle. Tare weights are also shown, but in smaller figures on the underframe. The locomotive ratings are made up on the basis of total load without reference to the number of axles in the train. The greatest hindrance to high average speed is the numerous service slacks, frequently at awkward points such as at the foot of a grade in each direction. Grades are plentiful on all the main lines except the Brussels-Antwerp - Esschen and Brussels-Ostend routes. The runs described below represent everyday performances, and by no means the maximum capabilities of the locomotives concerned.



Gradient profile of the Brussels–Luxembourg line of the Belgian National Railways

Luxembourg Line

The most difficult main line in Belgium to operate, the route from Brussels through Namur and Arlon to Luxembourg, has long 1 in 62 grades in each direction, and is a series of sharply-curved switchbacks with frequent speed restrictions, and a limit of 62 m.p.h. over the Belgian section. On train No. 3 (the heaviest down train of the day), leaving Brussels (Nord) at 20.16, a Type 1 Pacific, No. 104, had a tare load of 493 tonnes or about 545 gross until past Namur, for the train was packed with passengers for Namur, Jemelle, and Arlon, although an additional train was running as far as the last-named place. The 4·0 miles of stiff rise from the Nord to Quartier-Leopold were covered start-to-stop in 20 sec. less than the 10 min. allowed, and the ensuing 34·0 miles to the Namur stop were run in 45 min. 12 sec. compared with an allowance of 46 min., and including the normal 25-m.p.h. restriction through Gembloux. Up the 8 miles climb from Ottig-

nies to near Gembloux, begun at 61 m.p.h., speed did not fall below 30 m.p.h. The booking of 46 min. for the 32 miles from Namur to Marloie, 23 miles of which are uphill, 9½ of them at 1 in 62-67, was cut by 25 sec. after a late start of 1½ min. from Namur. Up the 7½ miles of 1 in 62 from Namur, the Pacific accelerated to a maximum of 33 m.p.h. and thereafter did not drop below 29 m.p.h. The booked momentary stop at Marloie lengthened into one of 1 min. 15 sec., and the 3·0 miles downhill on to Jemelle took 6 min. 37 sec. By cutting the 7-min. booked halt at Jemelle, the train left on time. The schedule of 66 min. for the 49·0 miles from Jemelle to Arlon is tight, for the line rises at 1 in 62 to 1 in 200 for 19 miles after leaving Jemelle, and there are further grades of 1 in 62-77, but the time taken by No. 104 with this heavy train was 65 min. 10 sec.

With 428 tonnes tare or 450 gross on train No. 74, leaving Brussels (N) at 7.52, a Type 10 four-cylinder simple Pacific exceeded the 46 min. allowance from Quartier-Leopold to Namur by 20 sec., but there was a signal check at Ottignies which prevented the following rise being rushed. Passing Ottignies at 32 m.p.h. the speed fell to a minimum of 26 m.p.h. up the 1 in 62. From Namur to Jemelle the 35·0 miles took 49 min. 40 sec. against a booking of 51 min.; from the Namur start the train was accelerated to 31 m.p.h. on the 1 in 62 grade, and maintained that rate steadily to the summit, but on the 1 in 62-100 bank after Ciney speed dropped to 27 m.p.h. Beyond Jemelle, the 19·5 miles uphill to Libramont were covered in 15 sec. over the 34 min. allowed, speed up the last 4½ miles of 1 in 62-67 being maintained at 29-30 m.p.h.

On the same train with a Type 1 Pacific, No. 101, hauling 326 tonnes tare and 350 gross, Baron Vuillet timed a run to Namur in 45 min. 25 sec. start-to-stop from Quartier Leopold with a signal slack to walking pace after La Hulpe and 65 m.p.h. through Ottignies. A speed of 54 m.p.h. was maintained up the 1 in 125 near Boitsfort. The 35·0 miles from Namur to Jemelle occupied 49 min. 39 sec. with a speed of 31-33 m.p.h. up the 1 in 62 before Courriere and 33 m.p.h. on the same grade before Ciney. On to Libramont the 19·5 miles took 35 min. 49 sec. including a stand of 33 sec. at Poix. Speeds were 44 m.p.h. up the 1 in 83 and, after a slight signal check, 36 m.p.h. up the 1 in 62.

In the opposite direction the line is easier, and the time of the international trains between Arlon and Brussels (N), 122 miles, is 170-180 min. including two or three stops, compared with 185-200 min. southbound. The Edelweiss Pullman is allowed 152 min. from Brussels (N) to passing Arlon including the Namur stop, and 148 min. in the reverse direction. This train stops only at Namur between Brussels and Luxembourg in each direction, and its normal load is 220 tonnes tare. With this load made up to about 240 tonnes gross by a large amount of baggage, Type 1 Pacific No. 114 should have had an easy task although the left-hand outside cylinder glands were in need of new packing. The 18·3 miles from Luxembourg to passing Arlon took 26 min. 12 sec. despite a slack to 8-10 m.p.h. up a 1 in 83 grade near Autelbas. The pass-to-pass time for the 49·0 miles from Arlon to Jemelle (37 m.p.h. limit through the former and 25 m.p.h. through the latter) was 53 min. 23 sec. including a slack to 10 m.p.h. before Libramont and with speed limited to 56 m.p.h. (due to curves) for 6½ miles downhill from Hatrival. Up the two miles of 1 in 62 near Hamipré the speed fell only from 53 to 47½ m.p.h. From passing Jemelle at 27 m.p.h. to passing Marloie at 30 m.p.h. the time was 6 min. 30 sec. for the 3·0 miles up 1 in 61-65, and up the 3¼ miles of 1 in 62 to Haversin speed did not fall below 35 m.p.h. The 32·0 miles from passing Marloie to stopping at Namur, of which 23 are downhill, took 37 min. 35 sec. After the re-start, the 3·7 miles uphill at 1 in 62-63 to passing Rhisnes were covered in 6 min. 21 sec., and the 38·1 miles from Namur to Brussels (N) occupied 49 min. 38 sec. start-to-stop. The overall time from Luxembourg to Brussels (N) was 179 min. 25 sec. against the booking of 178 min.

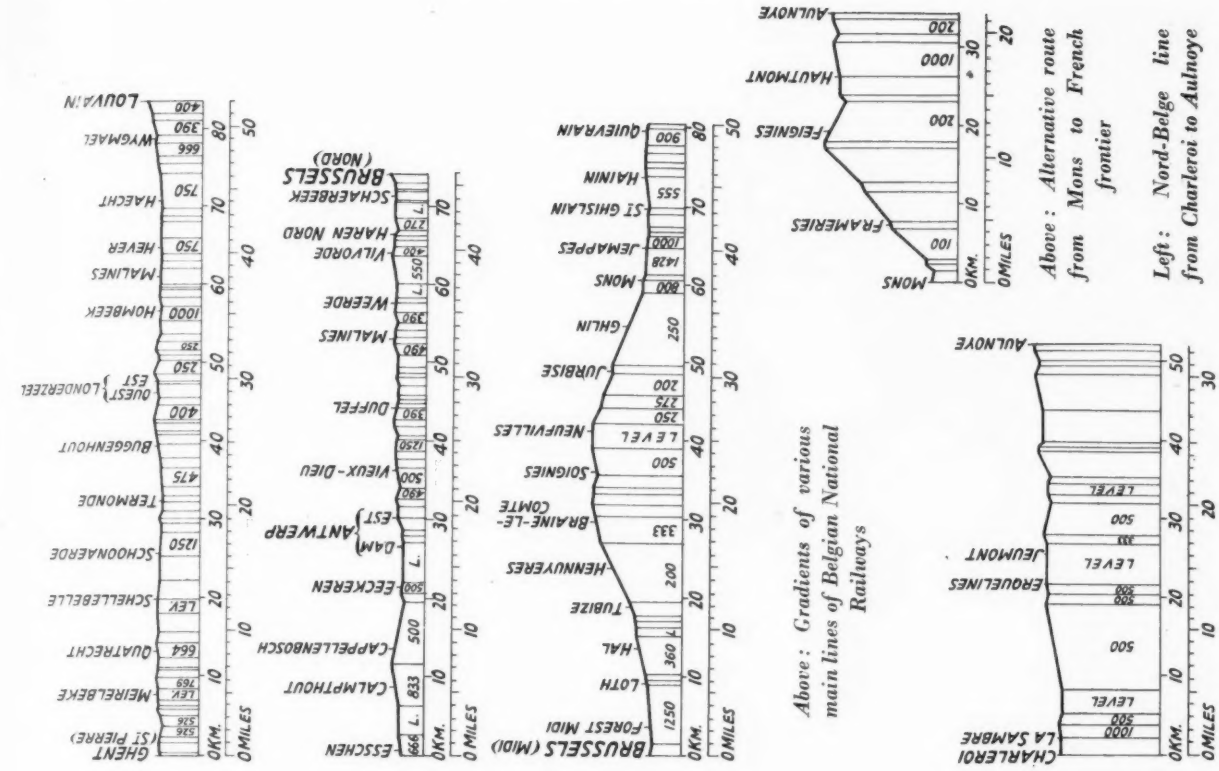
On train No. 7, running late, with a load of 396 tonnes tare and 415 gross, a Type 5 2-8-2 (built specially for hauling 500-tonne trains over the Luxembourg line) ran downhill from Libramont to Jemelle, 19·5 miles, in 23 min. 46 sec. start-to-stop with steam on for only 1½ miles, and then cut the 10-min. allowance for the 3·0 uphill miles to Marloie by 30 sec. The smart 18-min. start-to-stop schedule from Marloie to Ciney was improved upon also, the 14·0 miles taking 17 min. 44 sec., and the 3¼ miles uphill at 1 in 62 being surmounted with a minimum of 34·5 m.p.h. On to Namur the 18 miles were covered in 22 min. 53 sec. start-to-stop with a minimum of 34 m.p.h. up 2½ miles of 1 in 62 begun at 59 m.p.h. The 38·1 miles, from Namur to Brussels (N) took 57 min. 55 sec. including a stop of 2 min. 25 sec. at Brussels (Q-L), and the slow approach to the Nord station.

Ostend Route

Running from Brussels to Ostend is very fast, and apart from grades of 1 in 200 for five miles in each direction near Brussels (Midi) and somewhat longer grades of 1 in 165-250 on the line to Brussels (N), the line is virtually flat. The general speed limit is 75 m.p.h. with restrictions to 25 m.p.h. for a mile out of the Midi station and for 1¾ miles out of the Nord; to 37 m.p.h. through Bruges; and to 50 and 30 m.p.h. approaching Ostend. Trains to and from Brussels (N) also have a restriction to 56 m.p.h. at Denderleeuw. The international trains load up to 550 tonnes tare, and the ordinary Brussels-Ostend expresses scale up to 600 tonnes in the summer. The international trains all use Brussels (N), but the purely Belgian trains are divided between the Midi and the Nord.

On train No. 117 leaving Ostend Quai at 16.47, Type 1 Pacific No. 101 did well with a load of 422 tonnes tare or 445 tonnes gross, the 72·5 miles being covered in 2¼ min. under the 88-min. schedule, including stops at Bruges and Ghent. The 13·6 miles from Ostend to Bruges, with a slow pull in, were covered in 16 min. 35 sec., and then the 25·3 miles along the racing ground to Ghent (St. Pierre) were run in 26 min. 25 sec., speed being maintained at 68-69 m.p.h. along the level. From Ghent the 33·6 miles to Brussels (N) occupied only 35 min. 50 sec. Before the Denderleeuw slack, speed was maintained at 71-75 m.p.h. and did not fall below 59 m.p.h. up the long 1 in 275-280 grade to Dilbeek.

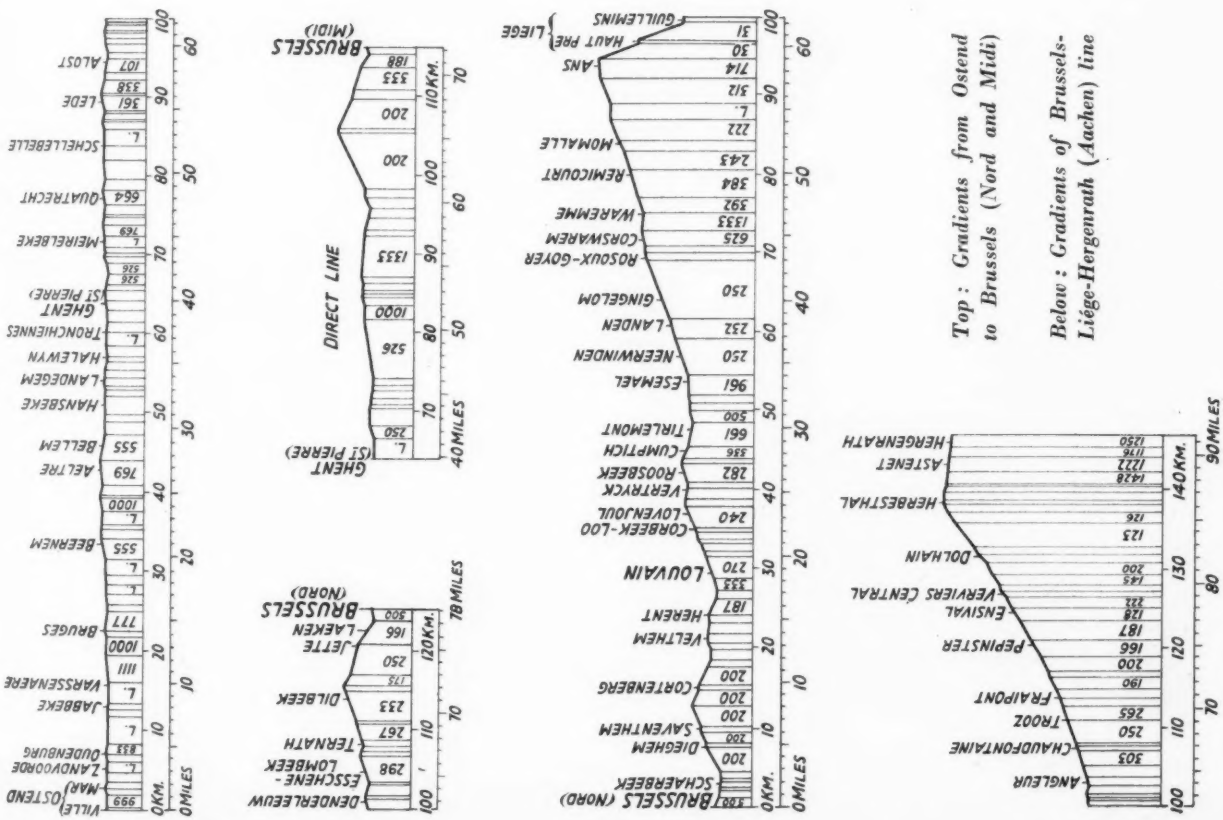
In the opposite direction with the same engine on train No. 116, leaving Brussels (N) at 14.11, Mr. R. E. Charlewood timed a punctual run on the easy 95 min. booking with a load of 500 tonnes tare or 530 gross. The 14·8 miles to passing Denderleeuw were run in 19 min. 25 sec. with a maximum of 75 m.p.h. at Ternath, but on to Ghent speed did not exceed 68½ m.p.h. From Brussels to Ghent the 33·6 miles occupied 40 min. 52 sec. (over a minute below schedule), and the 25·3 miles from Ghent to Bruges, with 30 min. allowed, took 30 min. 10 sec. including a p.w. slack to 34 m.p.h. at Oostcamp. The 13·6 miles from Bruges to Ostend were run in 10 sec. less than the booking of 18 min. although there was a slight relaying slack near Oudenberg. On the same train with 540 tonnes tare (570 gross) a Type 9 four-cylinder simple 4-6-0 had the assistance of an ex-German 4-4-0 of Type 66, and passed Denderleeuw in 20 min. 25 sec. after averaging 38 m.p.h. up the climb to Grand-Bigard and a mere 60 downhill from Dilbeek. Ghent was reached in 39 min. 53 sec. from Brussels; the 25·3 miles on to



Above: Gradients of various main lines of Belgian National Railways

Above: Alternative route from Mons to French frontier

Left: Nord-Belge line from Charleroi to Aulnoye



Top: Gradients from Ostend to Brussels (Nord and Midi)

Below: Gradients of Brussels-Liége-Hergenrath (Aachen) line

Bruges took 29 min. 45 sec. start-to-stop; and the 13·6 miles from Bruges to Ostend, 18 min. 20 sec. Over the 16·3 miles from Landegem to Oostcamp the speed averaged 63·8 m.p.h. pass-to-pass.

With 201 tonnes tare and 210 gross on the Cologne-Ostend Pullman, a Type 9 4-6-0 exceeded the 38-min. allowance to Ghent by 30 sec. with a maximum of only 63 m.p.h. before Denderleeuw and 65 m.p.h. after. Bruges was passed in 23 min. 11 sec. from the Ghent start with a maximum of 70½ m.p.h., and Ostend reached in 41 min. 39 sec. against an allowance of 42 min. Mr. Charlewood timed a non-stop Pullman run behind an ex-German Atlantic of Type 69 in 83 min. 40 sec. 81 min. 30 sec. net) to Ostend, 72·5 miles, at a time when speed restrictions between Brussels and Ghent were numerous. A distance of 39·7 miles, including a slowing through Ghent, was run in 38 min. 30 sec., with a maximum of 73½ m.p.h.

Liége Route

From Brussels to Liége is another fast line, but beyond Liége there is a climb varying from 1 in 500 to 1 in 125 all the way to the German frontier by a route so curved that on the westbound descent speed is limited to a maximum of 56 m.p.h. There is a slack to 25 m.p.h. in both directions for 2½ miles out of Brussels; a restriction to 37 m.p.h. over the canal bridge at Louvain; and the famous 1 in 32-35 descent from Ans to Liége with a limit of 30 m.p.h. eastbound. The standard express timing is 75 min. non-stop for the 61·7 miles from Brussels (N) to Liége, and 72 min. westbound. The night international trains load up to 500 tonnes tare, and the Liége expresses (some of which go on to Verviers) from 150 to 310 tonnes. Many trains are worked by Type 10 Pacifics, but Type 1 Pacifics are used also, and for the lighter trains Type 7 four-cylinder compound 4-6-0's, with occasionally a Type 9 4-6-0 simple. The Type 10 Pacifics are allowed 500 tonnes tare and the 4-6-0 engines 310 tonnes.

With the maximum rostered load, weighing about 325 tonnes gross, a Type 7 4-6-0 ran from Brussels to Liége in 80 min. 25 sec. including a stand for 12 sec. near the canal bridge at Louvain, and a signal check from 50 to 37 m.p.h. when running up 1 in 200 at Landen. The 16·8 miles from Brussels to the Louvain stop were covered in 22 min. 58 sec. with a maximum of 63 m.p.h. at Velthem, and with speed gradually rising to 44 m.p.h. up the 1 in 200 to Cortenberg. Starting from the Louvain signal stop, the 20·5 miles to passing Landen at 37 m.p.h. were run in 25 min. 2 sec. with a top speed of 59 m.p.h., and the next 20·4 miles uphill at 1 in 200-333 to Ans were run in 25 min. 15 sec. after a slow acceleration from the signal check. On the final part of the bank the minimum speed was 47 m.p.h. at Fexhe.

On an international train of 331 tonnes tare (345 loaded) Mr. Charlewood recorded an unchecked run in 74 min. 25 sec. behind a Type 10 Pacific, the 29·6 km. post at Louvain being passed in 24 min. 11 sec. from Brussels, the 48 km. post at Tirlemont in 36 min. 44 sec., and the 94 km. post at Ans in 67 min. 13 sec. In the reverse direction Mr. Charlewood experienced a good run behind a Type 10 Pacific. With 326 tonnes tare or 345 gross, Brussels was reached in 73 min. 42 sec. from Liége, but adverse signals ruined the last part of the journey, which, unchecked, could have been made in 68½ min. The 3·6 miles up to Ans were covered in 10 min. 30 sec. with the assistance of an 0-10-0T banker, and the 54·7 miles from Ans to Haren occupied only 52 min. 2 sec., an average of 63 m.p.h. with a maximum of 73 m.p.h. at Waremme. On another run with a train of 469 tonnes tare and 495 gross, and a strong side wind blowing, a Type 10 Pacific passed Ans in 11 min. 46 sec. with the assistance of two 0-10-0T bankers, and reached Brussels in 71 min. 19 sec. The top speed was again 73 m.p.h. at Waremme, and the minimum at Nosseghem after 3½ miles up at 1 in 200-250 was 54·7 m.p.h. The Ans to Haren stretch took 53 min. 9 sec.

Hauling a train taring 265 tonnes (280 tonnes full) a Type 7 4-6-0 took 11 min. 15 sec. up to Ans with one banker, and ran to Brussels in 75 min. 5 sec. inclusive of a check from 75 to 25 m.p.h. when running downhill at Gingelom and a momentary stop just west of Tirlemont. The 56 miles from Ans to Schaerbeek required 59 min. 45 sec., a fine time considering the checks. With 170 tonnes tare and 178 gross on the Cologne-Ostend Pullman, a Type 7 4-6-0 passed Ans in 10 min. 22 sec. with one banker, ran the 54·7 miles on to Haren in 54 min. 57 sec. including a slight signal check at Erps-Querbs, and reached Brussels in 6 sec. over the standard 72 min. booking against driving rain throughout. Speed with the banker was maintained at 20-22 m.p.h. up to Ans; the maxima were only 66 m.p.h. at Gingelom and 65 before Tirlemont, but the uphill work to Nosseghem was good, the minimum at the summit being 52 m.p.h.

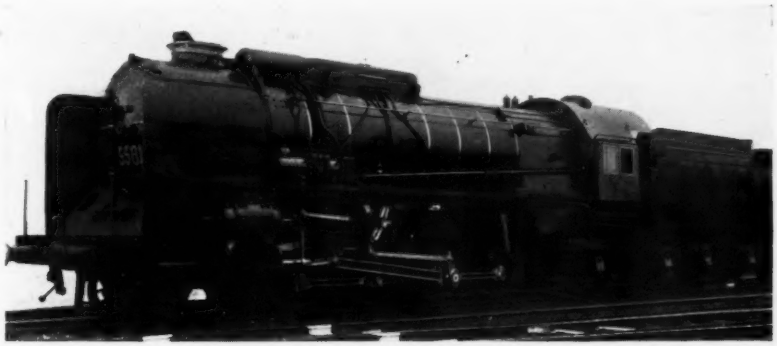
Mons Line

On the Mons route both Belgian National and French Nord engines are found, the Pacifics of the Nord working all the trains to and from Paris except the 9.0 and 20.0 services from Brussels (M) and the 9.15 and 20.0 trains out of Paris, which are handled by Belgian locomotives between Brussels and Aulnoye.

With a tare load of 311 tonnes or 332 gross, an ex-German three-cylinder 4-6-0 of Type 62 completed the 37·5-mile non-stop journey from the Midi station to Mons in 5 sec. over the 44-min. booking. The 18·4 miles out to Braine-le-Comte took 22 min. 55 sec., and a speed of 51 m.p.h. was maintained up the six-mile rise of 1 in 185-225 from Tubize. Speed downhill did not exceed 69 m.p.h. Coming back with a tare load of 360 tonnes or 380 gross, a Type 10 Pacific cut nearly two minutes from the 52-min. schedule, which includes a one-minute halt at Braine-le-Comte. Uphill to Braine, the speed on the 1 in 200 was maintained at 42-43 m.p.h., and the 19·1 miles were covered in 26 min. 20 sec. The 18·4 miles down into Brussels from Braine took 23 min. 5 sec. against the 24 min. booked.

On the 14.15 train ex-Paris one of the Nord Super-Pacifics of the 3.1250 batch with a tare load of 393 tonnes or 425 gross ran the 37·5 miles from Mons to Brussels non-stop in 40 min. 33 sec. despite a crawl into the Midi, and went up the 11-mile bank of 1 in 212-250-320 to Neufvilles with a minimum of 55 m.p.h. The first 7·3 miles from the Mons start to passing Jurbize, practically all at 1 in 200, were covered in 9 min. 53 sec., and the 19·1 miles to passing Braine took 21 min. 18 sec. Downhill speeds did not rise above 71 m.p.h. In the same direction a Type 1 Pacific hauling a gross load of 510 tonnes ran from Aulnoye to Mons, 21·8 miles, start to pass in 22 min. 32 sec. attaining 68 m.p.h. before Quevy and 79 m.p.h. before Frameries. From passing Mons at 25 m.p.h. the times were 11 min. 55 sec. to Neufvilles and 40 min. 38 sec. to the Brussels stop, inclusive of a 1 min. 10 sec. stand for signals at km. 30. Running downhill the speed again was high, a top rate of no less than 79·5 m.p.h. being attained near Hal. But the outstanding feature was a sustained 68 m.p.h. up the 1 in 250 and a minimum of 66 m.p.h. on the 1 in 200 up to Neufvilles. The gross time from Aulnoye to Brussels (M) was 63 min. 10 sec. against the schedule of 62 min. but Baron Vuillet, who timed the run, puts the net time at 58½ min.

Brussels–Strasbourg express hauled by a Type 10 four-cylinder simple Pacific. Note depth of ballast supporting the track



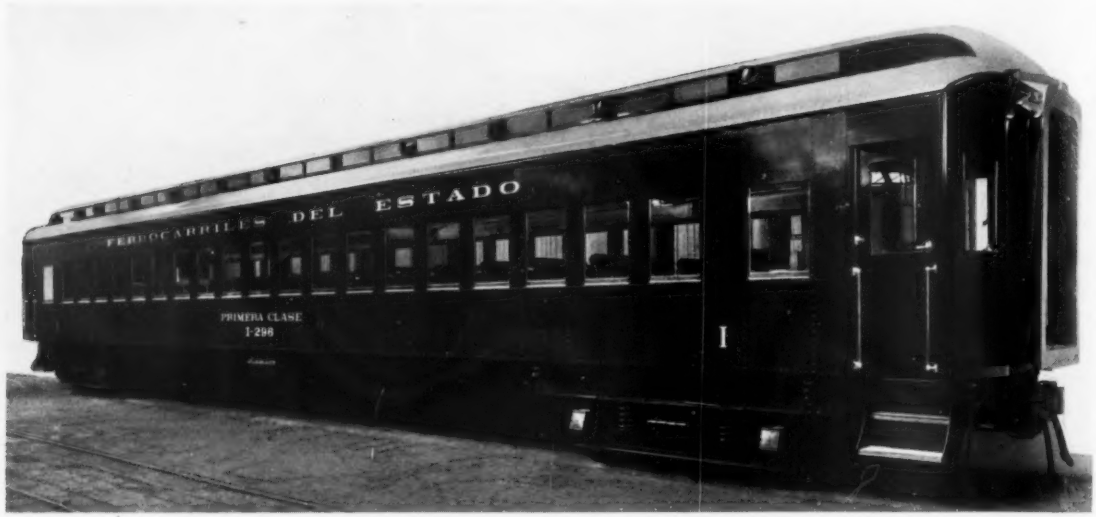
2-8-2 express engine built specially for the Luxembourg line

Ex-German 4-6-0 on Brussels–Mons train

Type 1 Pacific on Brussels–Paris express

EXPRESS TRAIN WORKING ON THE BELGIAN NATIONAL RAILWAYS

NEW EXPRESS TRAIN COACHES FOR CHILEAN STATE RAILWAYS



THE Chilean State Railways have recently placed in service fifteen new first class express coaches supplied by the Nuremberg works of M.A.N. (Maschinenfabrik Augsburg-Nürnberg A.G.). The vehicles are of all-steel construction, with two four-wheel bogies. They have an overall length of 22·5 m. (73 ft. 10 in.), and the normal Spanish gauge of 5 ft. 6 in. They are fitted out on Pullman lines. All the passengers (eighty in all) are accommodated in a single large compartment, and all face in the direction of travel as is customary in America.

The interior equipment is in Sapeli mahogany, with red leather upholstery for the seats. Externally, the cars are finished in indigo red, gold lined. In view of the climatic conditions, fans are fitted at the ends. The roof is of the clerestory type and is provided with ventilation dampers. The sides and the roof are further heat insulated with Celotex sheets.

The seating of the new Chilean coaches is arranged so that all passengers face the direction of travel. The seats are upholstered with red leather, and the woodwork is mahogany

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

C. & D. in the U.S.A.

THOUGH the scheme to make free collection and delivery for merchandise in less-than-carload lots, applicable to all the railways in the United States, has received a set-back through the action of the Inter-State Commerce Commission, as mentioned in our April 24 issue, suspending the new arrangement in the East, it is likely that an even more comprehensive plan may result. A group of the chief Eastern railways, including the Pennsylvania and the Erie, is now seeking to provide complete pick-up and delivery service over its entire systems, with no additional charge beyond the station-to-station freight rate. Under this scheme, naturally, no allowance would be made to those who still prefer to undertake their own cartage.

The companies concerned, the Boston & Maine, the Erie, the Norfolk & Western, the Pennsylvania, and the Wheeling & Lake Erie, propose in addition to offering this facility at all stations on their systems, to co-operate with their connecting lines in providing pick-up and delivery service for freight moving to and from other railways. In any case they would give door delivery of shipments originating on any railroad. In seeking the approval of the Inter-State Commerce Commission to this new plan the railways concerned point out that pick-up and delivery service is an integral part of all the forms of transportation with which they must compete today, and they contend that it is logically the first step in a programme of modernised less-carload freight rail service. Only by offering their patrons the advantages of complete, system-wide, door-to-door service within the regular station-to-station freight rates will the railways be able to meet the competition of other forms of transport. Several of the railways, like the Pennsylvania and the Erie, have been pioneers in door-to-door rail-truck service; the limited form of pick-up and delivery service now in operation has been working successfully since December, 1933, and the new plan is the result of that experience.

Identity Certificates

IN view of the recommendations made by certain of the licensing authorities it cannot be deemed surprising that steps have been taken to enforce the carrying of identity certificates by vehicles operated under C Carriers licences. The certificates are similar to those already carried by A and B vehicles and in the Goods Vehicles (Licences and Prohibitions) Regulations, 1936, which came into force on May 1, it is ordered that the certificates must be shown on and after October 1 next. It is a case of the innocent having to suffer for the peccadilloes of the less scrupulous and it is pleasing to know that the Traffic Area licensing authorities are making arrangements for these certificates to be issued to licence holders without the necessity for any application on their part and will announce through the local press and in the official *Applications and Decisions* the date when the issue of the certificates for their particular area should be completed. This action on the part of the authorities will not relieve a licence holder of his responsibility to see that by October 1 he has a certificate for each vehicle authorised under his C licence.

In the above view is seen one of the Willeme-Coder road-rail wagons in the service of the P.L.M. being drawn by a tractor on the road. It may be recalled that the vehicle has ordinary railway wheels for rail work, and when it is to come on to the road pneumatic-tyred wheels are fitted on the outside of one pair. For this operation the rails serve as a "jack," and when the wheels are fitted the vehicle is pulled to a place where the rails are below ground level, when the truck can be drawn off, to enable door to door delivery to be effected

Some typical units from the Pickfords fleet engaged in liquid bulk haulage

A Crane trailer of 3,000-gal. capacity carried by eight pneumatic tyred wheels

An eight wheeled A.E.C. tank wagon of 3,600-gal. capacity

Advantages of Liquid Bulk Haulage

The organisation of Pickfords tank wagon fleet

ALTHOUGH rail tank wagons have been used successfully for many years, many users and manufacturers, having no connection with the railways, are still accustomed to receiving their liquid supplies in barrels and drums. Compared with delivery by tank wagon, this method is far more expensive and inconvenient, as it entails the cost of returning empty containers, their cleaning and cooperage, and the weight of the container added to the weight of the commodity. The risk of leakage is also an important consideration when it is remembered that the value of oils varies between £20 and £50 a ton, and one leaky barrel may cost the purchaser anything over ten shillings.

With the increasing transport in oils and other liquids —particularly in the soap and confectionery industries— Pickfords Limited, one of the oldest established transport contractors in the country, has developed a special tank wagon service for the cartage of a variety of liquids without danger of contamination. This service may be used either for the carriage of liquids from railway tank wagons to the manufacturer, who has no connection with the railway, or direct by road from the supplier to the manufacturer. No inflammable oils are carried, so that the vehicles are not required to comply with the special constructional regulations necessary for this work. The service operates from the special depots at 170, High Street, Poplar, E., and at Bootle, Birmingham, and so popular has tank wagon transport become that many users are now installing bulk storage equipment to accommodate supplies.

Where there is a good interchange of traffic between north and south, direct road transport is recommended, but as so often happens, there is a superabundance of one way traffic, and in these circumstances it is cheaper to send the liquid bulk by rail, and have it collected at the station by the haulage contractor.

The liquids carried by the well-equipped Pickfords fleet of tank wagons include lubricating oil, vegetable oils, sodium silicate, caustic liquor, fuel oil, soap oils, cocoanut oils, crude glycerine, molasses, ink, acid, and linseed oils. As the demand for these liquids varies considerably, it is not possible to supply a separate vehicle for each particular commodity, unless the tank wagon is hired on contract, but great care and attention is paid to the cleanliness of the tank when, for instance, it is to be filled with lubricating oil immediately following a load of palm oil or other vegetable liquid. The customary method of cleaning, which has been found to eliminate contamination, is to fill the tank with steam, and then, after the final traces of oil have been liquefied by condensation, to scour out the inside and dry it by a special process. A special cleaning plant has been erected at the

An A.E.C. tank wagon being loaded

12-ton tank trailer for local haulage coupled to a Latil Traulier

Poplar depot, and we understand that a number of Pickfords customers have even provided facilities for steam-filling the tanks under high pressure after delivery.

In the early stages of the service, various tests were carried out to discover the metals most easily cleaned, with the result that the tanks used mainly for vegetable and mineral oils are made alternatively of mild steel and aluminium, while those in service for the transport of edible oils are of stainless steel. In the case of heavy lubricating or soap oils which solidify unless a loading temperature of 110° F. or over is maintained, insulated tanks are provided, the usual method being to cover the tank with two inches of Alfol. These oils are loaded at a temperature of 130° to 140° F., which is retained, with a small drop of perhaps 3° to 5°, over a 15-hr. journey during the coldest periods of the year. This is in contrast to the container method by which certain liquids have to be heated before loading in barrels, and the barrels heated at their destination before they can be emptied.

Of the six rigid eight-wheeled tank vehicles stationed at the Poplar depot for long distance work, four were supplied by the Associated Equipment Co. Ltd. and two by Armstrong-Saurer Commercial Vehicles Limited. The last two incorporate the latest Dual Turbulence type diesel engine, fitted with 3,300-gal. twin compartment stainless steel tanks, insulated with Alfol. The tanks and cab were supplied by the Duramin Engineering Co. Ltd., and the complete vehicles weigh approximately 8 tons 5 cwt.

One of our illustrations shows a Latil tractor coupled to a 3,000-gal. tank trailer, fitted with a single compartment mild steel tank supplied by the Duramin Engineering Co. Ltd. This unit is part of a fleet used mainly for delivering from wharves and railway sidings in the London area. The tank is lagged with 2 in. of Alfol and provided with 4-in. outlets, while a 3-in. Albany pump is mounted on the tractor. For smaller work a short wheelbase 2-ton Bedford fitted with a four tons capacity tank unit is employed. At the other end of the scale is a Lightweight Mark II type of A.E.C. vehicle, and fitted with a 3,600-gal. mild steel tank.

Among the principal vehicles operating from the Liverpool depot are articulated six-wheelers and rigid eight-wheelers, four of the former units being used in conjunction with five Muir-Hill detachable trailer units. The pump for the filling or discharging of the tank is mounted on the tractor unit, and fitted with 26 ft. of flexible steel hose. The tanks, which were constructed by W. P. Butterfield Limited, of Shipley, are built of aluminium with two compartments, and have a capacity of 1,500 gal. The six-wheelers are used mainly for local delivery, but the rigid eight-wheelers, which are of A.E.C. manufacture, undertake longer journeys, and incorporate the new maximum-size 3,600-gal. mild steel tank. The time taken to unload is approximately 35 min. when discharging into bulk storage, but for barrelling purposes a tap is provided.

Every facility for the mechanical maintenance of the machines operated by this and other sections of Pickfords business is to be found at Long Lane, Bermondsey. With a business of this magnitude, the engineering departments are as important as the commercial, and we hope to deal with this subject in a subsequent article.

Bus Service on German "Autobahn"

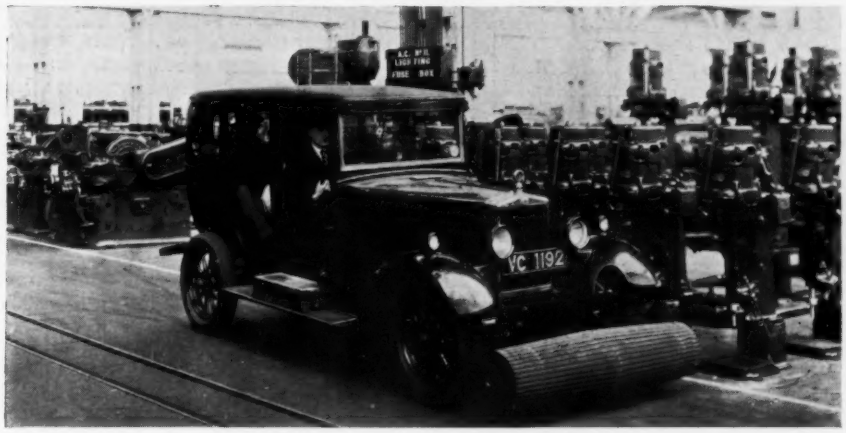
The Reichsbahn opened its first north-west German motorbus service on April 6, between Hanover and Brunswick (Braunschweig). Between Lehrte and West Brunswick this route runs over the completed section of the new motor road, and the remainder of the journey is over ordinary streets. Four journeys each way a day are provided to begin with, giving improved connections between the two towns and making it easier to get from Brunswick to Hamburg and the West.

Two streamlined buses with 19 comfortable passenger seats are provided. They are only 8 m. (26 ft. 3 in.) long and excellently sprung, with low centre of gravity and a clear view all round, making travelling very comfortable. The chassis, of special steel, and motors have been supplied by Krupp, Essen. The motor is a four stroke 4 cylinder 65-h.p. Boxer, already found satisfactory in motor lorry work, operating on German fuel. The highest speed is 85 km. (52·82 miles) per hr. Oil pressure brakes on all wheels are provided and automatic time-distance recorders which show the speed and length of stops.

The route is through beautiful country in the Prussian province of Lower Saxony. It is about 32 km. (20 miles) long. Beginning just north of Lehrte, it passes over the railway to Hamburg, through Hohenwald forest, crosses the Stendal-Berlin line, traverses the Hämel Wood and, via Sieverhausen, Ambostel, Abbensen, and Eixe, reaches Peine, connecting with the ordinary road to Stederdorf. It then continues eastwards via Duttenstedt and Meerdorf through the Wendeburg-Zweidorf forest, crosses the Brunswick-Plockhorst railway, and reaches the Celler Heerstrasse, which connects the Lüneburg Heath with Brunswick.

A New Type of Safety Bumper for Cars

A simple device for use in such places as works and goods yards

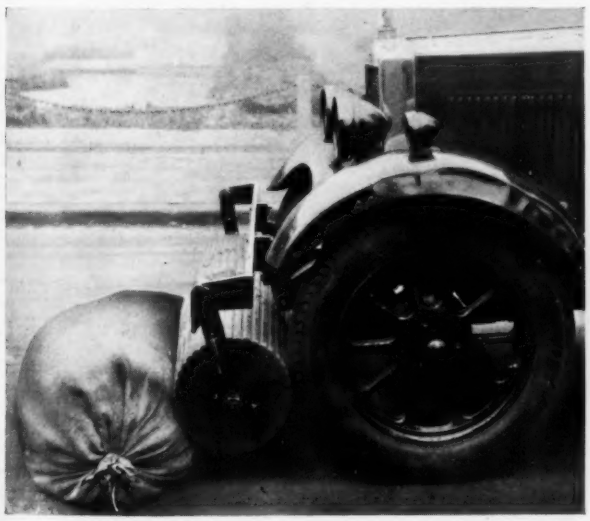


BY courtesy of Alfred Herbert Limited, of Coventry, we are enabled to illustrate and describe a new type of safety bumper which has been applied to a saloon car utilised in the works for transporting executives from one section to another of the extensive area of ground covered. This device was evolved by Sir Alfred Herbert and is now playing its part in the Safety First system observed throughout the works for the protection of employees and the reduction of accidents to a minimum. Its use prevents persons being run over by the car should they emerge suddenly from behind a machine or through a doorway and fail to see the oncoming though not swiftly-moving vehicle.

This simple but effective automatic device consists of a light hollow roller the full width of the car. This roller is free to rotate upon a spindle suspended by a swinging link at each end from a strong cross bar mounted on the front dumb irons of the car. A spring-loaded plunger, incorporated in each link, engages in a notched quadrant attached to the top point of support. Normally the plungers hold the roller, which is clear of the ground, in a position about 3 to 4 in. ahead of the front tyres of the car. The roller is tapered from a large diameter in the centre to a smaller one at the extremities.

If the roller comes into contact with an object when the car is moving forward, it is forced against the tyres, and the roller is thereby caused to rotate in the direction opposite to that of the wheel. The heavier the object, the more firmly is the roller held in contact with the tyres. Any obstacle is caused to run forward and sideways out of the path of the car. A large and heavy sack was rolled out of the way in a distance of a few yards.

The introduction of rapid transport within the works has brought with it road dangers, but this ingenious safety device, which is now being employed, considerably lessens the likelihood of serious injury in an accident. It will be noticed that the doors of the car have been removed to facilitate entry and exit.



A view showing the obstruction pushing the safety roller back on to the front wheel

This shows how the obstruction is thrown out to one side due to coned shape of the roller

Leyland Cubs in London

Nearly a hundred 20-seater buses, mounted on Leyland Cub oil-engined chassis, have now been delivered to the L.P.T.B. and are gradually taking their place in certain town and country services

ABOUT a coupie of years ago an order was placed by the London Passenger Transport Board for one of the Cub chassis built by Leyland Motors Limited, with a view to testing the suitability of the type for carrying 20-seater bodies for both town and country service work. How satisfactory was the experience is indicated by the fact that an order for 74 of these oil-engined chassis was placed; the vehicles to be used on the services in what is known as the Country Area. A further order for 22 chassis was subequently placed for similar vehicles to be used in the Central Area. All of them have 20 seater bodies of metal construction; the contract for the first 74 was placed with Short Bros. Ltd., while those for the Central Area services are being made by Weymann.

The design and specification of the bodies was based on the original body for the type evolved and built in

One of the Leyland Cub 20-seater buses in L.P.T.B. service, seen on route 450 in the neighbourhood of Dartford where this single-decker has proved its suitability for use in narrow country lanes

the board's works at Chiswick. They have a front entrance so as to render them suitable for one-man operation; the door is of the sliding type, working on a curved track, conforming to the body shape, and is power-operated under the control of the conductor-driver. An external handle is provided which ensures that the door can be opened from outside when necessary. The dash is mounted rigidly on the chassis and the body is floated round it, the gap between the two being filled in with leather so that working of the body cannot be transmitted to the dash structure or bonnet.

An outstanding impression of the interior of the saloon is that moulding, excrescences and places where dust might collect have been reduced to the minimum. Metal finishers, covered with Rexine, are fitted around the windows and a rounded coving allows the floor to merge into the side panels without sharp corners. The opal electric light bulbs are partly recessed into the white panel over the windows. Seats are of the L.P.T.B. lightweight pattern, upholstered with Dunlopillo fillings, covered with moquette, and there is a full width hand rail over the back of the cross seats, in place of the small grab handle. The seating arrangement is for five across the back seat, with four on side seats facing inwards over the rear wheel arches and the remainder on the usual double seats, facing forwards. The emergency door is at the front on the offside.

We illustrate one of the Leyland Cubs working on the country services; this particular one is on route 450, which runs between Dartford and Gravesend, through Greenhithe. Some of those ordered for the Central area are now working from the Enfield garage on route 204 between Enfield and Gordon Hill, and others will be appearing on route 205 between Potters Bar and Chingford, via Goff's Oak and Waltham Cross.

Incidentally, it may be noted that while the traffic organisation of the L.P.T.B. Country Buses and Coaches is controlled from Reigate, the maintenance of all vehicles has during the past year been centralised at Chiswick, where a special department has been organised to deal with the maintenance and overhaul of the vehicles on Central and Country services. The routine maintenance, as it may be called, including the weekly checking of the oil in the back axle and an inspection of the body, is done at one of the 87 garages from which the vehicles in service work.

We learn from *The Leyland Journal*, that the Leyland Cubs are docked every 10,000 miles, the bus being withdrawn from service for one day for this purpose. The engine is then decarbonised, whilst brakes and clutch are re-lined when necessary. Other necessary repairs or unit changes are carried out at the same time. There is also an intermediate dock 5,000 miles after each full dock, mainly for the purpose of body cleaning and inspection, although injectors are again tested and cleaned. The time elapsing between docks naturally varies with the scheduled daily mileage of individual buses; on the class of service to which the Cubs are allocated this varies considerably, and may be anything from 50 to 200 miles. In addition to the regular docking procedure, each bus is sent to the central repair works at Chiswick for a periodic overhaul. These overhauls are arranged on a time basis in order to suit the continuous flow system adopted. As at present arranged the Cubs will be given their first overhaul after 18 months, and subsequent overhauls will take place every 14 months. This period may be increased later if it is found practicable to do so. Whilst the bus is at Chiswick the body is completely reconditioned and painted, and the present organisation permits a thorough mechanical renovation of the chassis at the same time.

Leyland Oil Engine for New Zealand

The New Zealand Government Railways recently took delivery of their first oil engine for bus work. In view of the results obtained from the large number of Leyland direct injection engines operating in that country, it is not surprising that this power unit should be of Leyland manufacture. It is fitted in a Tiger chassis.

Lighting Bus Yards and Garages

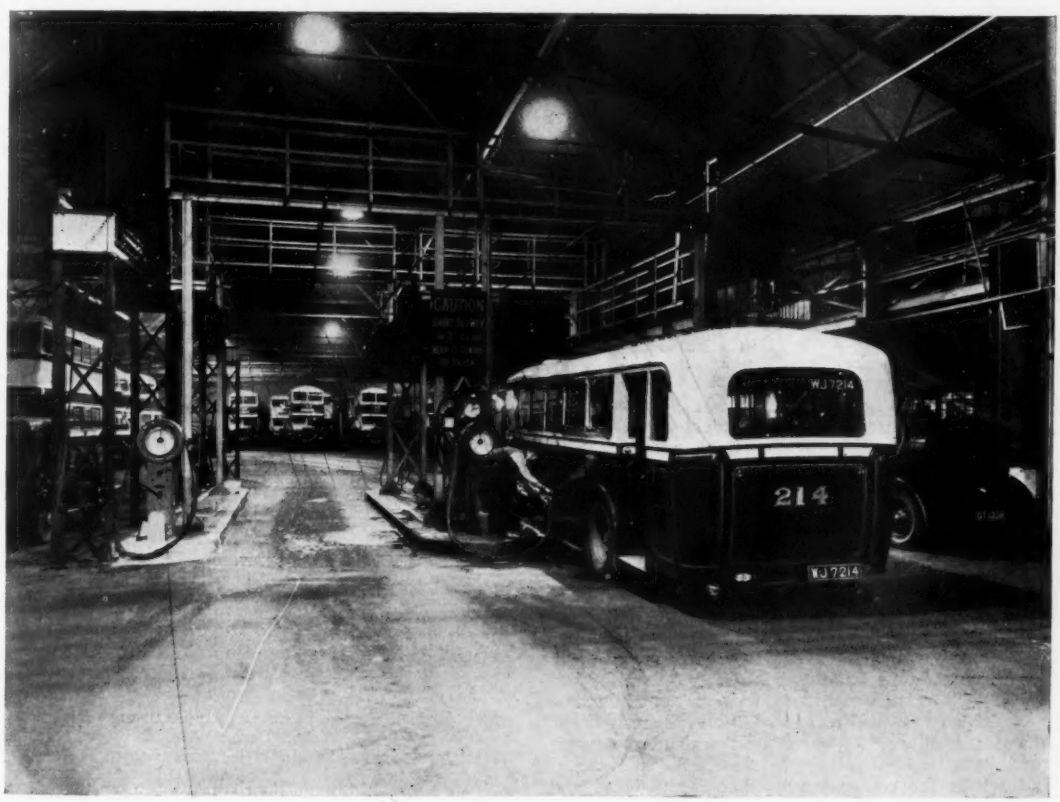
How modern systems of illumination can be utilised to secure the utmost efficiency from the cleaning and maintenance staffs

THE two illustrations on this page of scenes in the Townhead bus depot of the Sheffield Corporation are interesting as showing the high standard of illumination that it is now possible to secure during the hours of darkness by the use of modern equipment. This depot has recently had its old system of incandescent lamps superseded by mercury vapour lamps and the splendid and even light now available is attested to by the fact that the photographs which we reproduce were secured at night with the light furnished by the lamps.

Altogether twenty-four 400-watt Osira lamps, each in an industrial type of reflector, have been installed in the depot and we are informed that although the amount of light available is so much greater the current consumption has been decreased from the 19½ kilowatts required by the metal filament lamps formerly used to 9 kilowatts with the Osira lamps. This Osira type of lamp was invented and developed in the research laboratories of the General Electric Co. Ltd., at Wembley and introduced in June, 1932.

It may be recalled that the bus routes extending outside Sheffield are jointly owned by the Corporation and the L.N.E.R. and L.M.S.R., and controlled by a Joint Committee, consisting of two L.N.E.R., two L.M.S.R. representatives, and four from the Sheffield Corporation.

In this view of the parked buses, the evenness of the illumination is emphasised



Refilling operations as well as washing and cleaning are facilitated by the new system of lighting in the Townhead bus depot at Sheffield

Gerald Walter Erskine Loder, Baron Wakehurst of Ardingly

It is with regret that we have to record the death on April 30 after a long illness, of Lord Wakehurst, better known as Mr. Gerald Loder, who had retired from the Chairmanship of the Southern Railway Company rather more than a year ago. Born in 1861, the fourth son of the late Sir Robert Loder, Bt., M.P., he was educated at Eton and at Trinity College, Cambridge, where he obtained in 1884 a third class in the Law Tripos. Called to the Bar in 1888 at the Inner Temple, he was from 1888 to 1892 private secretary to Mr. C. T. Ritchie, the then President of the Local Government Board. From 1896 to 1901 he was private secretary to Lord George Hamilton, Secretary of State for India. Mr. Loder was Conservative Member for Brighton from 1889 to 1905, and in 1905 became a Junior Lord of the Treasury. Although he did not again sit in Parliament he continued for many years to take an active interest in political matters and in 1924-26 was President of the National Union of Conservative and Unionist Associations.

His direct connection with railways began in 1896 when he was elected to the board of the London Brighton & South Coast Railway Company to fill the vacancy caused by the death of Sir Julian Goldsmid, Bt., M.P. At the time of Mr. Loder's election, Mr. Samuel Laing, who had done so much to strengthen the financial position of the company, had only recently retired from the Chairmanship and had been succeeded by Lord Cottesloe. Mr. Loder was also associated with two other Chairmen, namely, the Earl of Bessborough and Mr. Charles C. Macrae while he was on the Brighton board. On the death of Mr. Macrae on December 6, 1922, Mr. Loder was elected to the chairmanship, which he held until the Brighton Railway after the close of that year became merged in the Southern Railway Company. He presided, however, at the final meeting of the Brighton Railway on February 21, 1923. Although he held the Brighton Railway Chairmanship for such a short period it was a proof of the high esteem with which he was regarded by his colleagues that they definitely elected him Chairman when they might have rested content with an Acting Chairman for the time being.

On the formation of the Southern Railway Company in 1923 Mr. Loder, who was one of the five Brighton Railway directors chosen for the new company, was appointed Joint Deputy Chairman with General Baring, who succeeded to the Chairmanship on the death of General Drummond in 1924. Mr. Loder then became sole Deputy Chairman, and in May, 1932, was elected Chairman on the death of General Baring. Continued ill health caused him to resign the Chairmanship in January, 1935, but he remained a director until a few days before his death. In the Birthday Honours List of June, 1934, he received a peerage for political and public services and took the title of Baron Wakehurst of Ardingly in the County of Sussex, from his country seat at Wakehurst Place.

The late Lord Wakehurst,

Chairman of the Southern Railway Company, 1932–35

Lord Wakehurst had been closely associated with the interests of Brighton which he had represented in Parliament for 16 years and as a director of the Brighton Railway had a long and intimate acquaintance with its working. His business interests like those of Mr. Whitelaw, the Chairman of the London & North Eastern Railway, were centred in the railway, and his only other directorship was that of the Eagle Star and British Dominions Insurance Company. In the affairs of the Southern Railway he took a keen and practical interest. The charm of his personality always overcame difficulties and ensured his popularity with his colleagues and the officers and staff with whom he came in contact. Some time ago when speaking at a meeting of the Retired Railway Officers Society he had expressed regret that the directors of today were not brought so closely into touch with the officers (except the most important) as was the case with the smaller undertakings of pre-grouping days.

In his leisure hours Lord Wakehurst's chief interest lay in his beautiful garden at Wakehurst Place and his intimate knowledge of horticulture was recognised by his election, on the death of Lord Lambourne, as President of the Royal Horticultural Society. His practical knowledge of trees led to his being elected President of the Royal Arboricultural Society in 1927.

In 1890 he married Lady Louise de Vere Beauclerk, eldest daughter of the tenth Duke of St. Albans. He is succeeded by his son, Captain the Hon. John de Vere Loder, M.P., for the Lewes Division of Sussex.

The funeral took place on Saturday, May 2, at Slaugham, Sussex. The Rev. F. E. S. Jacomb-Hood and the Rev. J. L. Brack officiated. In addition to the family mourners and many representatives of public bodies and associations there were present: Sir George Courthope, M.P., Director, and Mr. F. H. Willis, Secretary, Southern Railway.

A memorial service was held on Monday, May 4, at St. Margaret's, Westminster, where Canon Carnegie and the Rev. L. N. de Burgh officiated. In addition to family mourners among those present or represented were:—

The Southern Railway: Mr. R. Holland-Martin, Chairman; Mr. E. Gore-Browne, Deputy-Chairman; Mr. L. S. Amery, M.P., Lord Clinton, Lord Ebbisham, Sir Charles L. Morgan, Mr. Charles Sheath, and Sir John E. Thornycroft, Directors; Sir Herbert Walker, General Manager; Mr. W. Bishop, Solicitor; Mr. Charles Cooper, Assistant for Continental Traffic; Mr. George Ellson, Chief Engineer; and Mr. C. A. G. Linton, Assistant Engineer; Mr. A. Howie, Joint Accountant; Mr. F. A. Brant.

Also Lord Palmer, Joint Deputy-Chairman, and Mr. Harold Macmillan, M.P., Director, Great Western Railway; Mr. William Whitelaw, Chairman, and Mr. James McLaren, Secretary, London & North Eastern Railway; Sir Josiah Stamp, Chairman, London Midland & Scottish Railway; Lord Ashfield, Chairman, Mr. J. S. Anderson, Secretary and Treasurer, London Passenger Transport Board; Mr. Ernest Ashton, Secretary, Pullman Car Co. Ltd.; Mr. J. A. Kay, Editor, THE RAILWAY GAZETTE.

RAILWAY NEWS SECTION

PERSONAL

Mr. R. Carpmael, Chief Engineer of the Great Western Railway, has been appointed Chairman of the Civil Engineers' Committee at the Railway Clearing House for 1936.

Brigadier-General Sir Harold Hartley, Vice-President of the London Midland & Scottish Railway, has been honoured by the conferment of the honorary degree of Doctor of Science of Sheffield University.

The Rt. Hon. Lord Colwyn, P.C., D.L., has resigned his directorship of the Manchester Ship Canal Company owing to pressure of other business. Mr. Kenneth Stoker, Managing Director of Manchester Liners Limited and a Director of Furness Withy & Co. Ltd., has been elected a Director to fill the vacancy.

We learn with regret that Mr. E. A. Fear, of London, Cashier to Richard Costain Limited, contractors working on the Trans-Iranian Railway, was recently shot dead by brigands. Mr Fear was taking £2,000 from Khorremabad to the headquarters of his firm. His chauffeur and a passenger were also killed, and the money was stolen.

On April 27, the directors of J. Stone & Co. Ltd. presented a gold watch and chain to each of the following members of its office staff: Messrs. H. Lack, H. S. Lock, D. McLaren, D. M. Paton, C. Petter, and C. Shave, in recognition of 50 years' faithful service. The presentation was made by the Chairman, Sir Frederick Preston, K.B.E., who was supported by the Deputy Chairman, Sir John Prestige, and the Managing Director, Mr. Henry W. Lee.

The Minister of Transport has been informed by the Appointing Trustees acting under the provisions of Section I of the London Passenger Transport Act, 1933, that they have appointed Sir Edward Holland, J.P., and Sir Henry Maybury, G.C.B., K.C.M.G., C.B., to be members of the London Passenger Transport Board for a further period of three years on the expiration of their present appointments on May 17. They were appointed for three years on the board's formation in 1933.

We regret to record the death, on May 1, of Major-General Sir Philip Nash, K.C.M.G., C.B., formerly Director General and later Inspector General of Transportation, Western Front, during the war. He was born in 1875 and began his railway service in the Locomotive Department of the former Great Northern Railway, in 1897, at Grantham, but two years later he went out to India, and, after holding several other appointments on that system, was appointed Assistant Agent of the East Indian Railway. He was at home on leave in 1915, and was invited by Sir Eric Geddes to assist him at the Ministry of Munitions, as Director-in-Charge of the Royal Arsenal at Woolwich and of the National Filling Factories. In 1916, however, he was appointed Deputy Director-General of Transportation of the British Expeditionary Force in France, and succeeded Sir Eric as Director-General in the following year. Sir Philip was three times mentioned in despatches and became Inspector General of Transportation, Western Front, in 1918. He relinquished his commission with the honorary rank of Major-General in 1920, and from 1919 to 1921 was Director of Traffic, Ministry of Transport, joining the board of the Leeds Forge Co. Ltd. in the latter year. Shortly afterwards he became Managing Director of that firm, and, in 1922, was appointed Chairman of the Metropolitan-Vickers Electrical Co. Ltd., resigning in 1931. He also held the chairmanship of the Associated Anglo-Atlantic Corporation and a seat on the board of Associated Electrical Industries Limited until 1932. Sir Philip was decorated; with the C.B. in 1917; as Commandeur, Legion of Honour, with the Belgian Croix de Guerre, and as Grand Officer, Order of the Crown of Italy in 1918; and with the American D.S.M. in 1919. He was a Member of the Institution of Civil Engineers (1919), Member of the Institute of Transport (1920), and an Associate of the Inst. of Electrical Engineers.

The funeral took place privately at All Saints' Church, Ennismore Gardens, Knightsbridge, on Tuesday afternoon, May 5, only those who knew and worked with Sir Philip being invited by Lady Nash to attend.

The late Maj.-Gen. Sir Philip Nash, K.C.M.G., C.B.,
Inspector General of Transportation, Western Front, 1918–19; Director of Traffic, Ministry of Transport, 1919–21

Indian Railway Staff Changes

Mr. P. R. Leigh-Bennett, Superintendent, Transportation Power, B.-N.R., has been appointed Acting Transportation Manager with effect from April 9, *vice* Mr. A. Duncan, Transportation Manager, granted leave from the same date.

Mr. A. E. W. Robinson, Coal Manager, B.-N.R., has succeeded Mr. P. R. Leigh-Bennett as Acting Superintendent, Transportation Power, from April 6.

Mr. W. A. Harris, District Engineer, B.-N.R., has been appointed Acting Superintendent Maintenance, West, with effect from April 8, *vice* Mr. A. T. D. Anderson, Acting Superintendent Maintenance, West, who has been granted leave from the same date.

Mr. N. D. Calder, Officiating Traffic Manager, E.B.R., has been granted 3½ months' leave as from April 17.

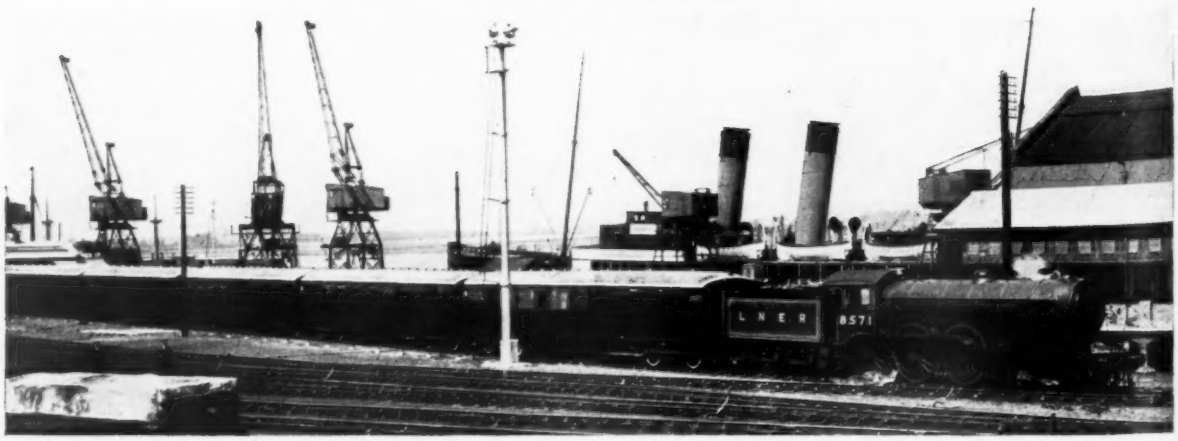
Mr. V. S. Sundaram has resumed charge as Controller of Railway Accounts, Government of India, as from March 20.

Mr. J. Fearfield, C.I.E., B.A., Manager of the Bikaner State Railway, has been granted 6½ months' leave as

Left: The G.W.R. streamlined A.E.C. diesel railcar No. 17 was placed in service on Monday with a special body to work an experimental parcels service between London and Oxford. It is seen loading at Southall station (see paragraph on page 928)

Right: L.M.S.R. Pacific No. 6212, "Duchess of Kent" leaving Euston with the Midday Scot last Monday on the inaugural run to the accelerated London–Glasgow 7½ hour schedule (see pages 895 and 924)

Below: New stock for Hook and Antwerp Continental, L.N.E.R., at Parkeston Quay after trial run on May 1 (see pages 893 and 931)



from April 17, and Mr. J. A. ff. Powell, M.I.E., Engineer-in-Chief, will act for him.

Capt. S. J. Oakshott has been appointed Acting Marine Superintendent, B.N.R., vice Commander E. S. Graham, granted leave, as from April 10.

Dr. P. L. C. Carrier has been appointed to officiate as Chief Medical Officer, Burma Railways, as from March 18.

On reversion from Controller of Railway Accounts, Railway Board, Mr. H. C. Norbury resumed charge as Chief Accounts Officer, G.I.P.R., as from March 23.

ARGENTINE RAILWAY STAFF CHANGES

Mr. John Wilson, O.B.E., who was recently appointed General Manager of the Entre Rios & N.E. Argentine Railways, sailed for England on leave on April 10.

Mr. P. Bourse, who was Secretary to the Local Board of the Central Uruguay Railway for some years, and became Secretary to the Argentine Railway Labour Advisory Committee at the time of its formation, has been appointed Chief of the Labour and Staff Office of the B.A.G.S. and B.A. Western Railways, in succession to Mr. T. B. Stewart, appointed Traffic Manager of both these companies.

Mr. J. F. Glennon, Chief of the Commercial Section (Management), Buenos Ayres Great Southern Railway, has retired on pension after 41 years' service with that company, which he joined in 1895. At first employed on the staff of the Local Committee, he was afterwards transferred to the Commercial Section in 1905, and to the Traffic Department in 1924. In 1927 he was appointed Chief of the Commercial Section of the Management.

Forthcoming Events

May 8 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 7 p.m. "Power Transmission by Belts," by Mr. J. Hornsby.

Mansion House Association on Transport, at Trocadero Restaurant, Piccadilly Circus, London, W.1, 1.15 for 1.30 p.m. Annual Business Luncheon.

May 9 (*Sat.*).—L.N.E.R. (G.C.) Debating Society, at University College, Shakespeare Street, Nottingham, 4.30 p.m. Annual General Meeting.

Permanent Way Institution (Manchester-Liverpool), at Birkenhead, 3 p.m. "Railway Bridges—Elementary Notes on Design," by Mr. J. Campbell.

May 11 (*Mon.*).—Permanent Way Institution (London), at Staff Dining Room, Waterloo Station, Southern Railway, S.E.1, 7 p.m. "Some Notes on the Maintenance of Permanent Way," by Mr. J. Peck.

May 12 (*Tues.*).—Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. Annual General Meeting. Corporate Members only.

Permanent Way Institution (Sheffield), at Royal Victoria Hotel, 7 p.m. Short-Paper Night.

May 14 (*Thurs.*).—Institution of Engineering Inspection, British Industries House, Marble Arch, London, W.1, 6 p.m. "The Inspection and Testing of Power and Automatic Railway Signalling and Point Operating Installation," by Mr. D. Shipp.

Final Ambulance Day at Paddington

The final round of the G.W.R. series of ambulance competitions was held in the General Meeting Room at Paddington on Friday, May 1, when the eight teams selected from the original entry of 292 teams contested possession of the Directors' challenge shield and prizes. The adjudicators were Dr. W. J. Crawford of Southall (team work) and Dr. S. McCormac of Newport (individual tests). The team test represented a motor accident, and all the settings were this year outside railway premises. The work of the competitors throughout the day was watched by a large number of keenly interested spectators, including Mr. Charles J. Hambro, a Deputy Chairman of the company, and officers and medical men. Two novices' teams were represented, Swindon Beginners', and Aberdare.

The presentation of awards was presided over by Mr. Charles Hambro, who was supported by Mr. J. F. Lean, Principal Assistant to the General Manager; Mr. J. R. Morris, Divisional Superintendent, Chester; Mr. L. J. A. Callaway, District Goods Manager, Gloucester; and Dr. H. Cavendish Fuller, Chief Medical Officer of the company. Mr. Hambro opened the proceedings by asking the Centre Secretary, Miss C. A. Ault, to announce the result of the competition, which was as follows:—

		Marks
First, Directors' Challenge Shield and Prizes	Swindon	269½
Second, Carvell Cup and Prizes ...	Fishguard Harbour	246½
Third, Prizes ...	South Lambeth ...	241
Fourth, Prizes ...	Swindon Beginners	238½
Fifth	Hereford	216½
Sixth	Gloucester ...	211½
Seventh	Liskeard	211
Eighth	Aberdare Beginners	182

Mr. Hambro said he welcomed the opportunity of being among ambulance workers, because the work appealed to everyone, and the people who ran the teams could relieve a lot of pain.

An important part of the proceedings was the presentation of gold, silver and bronze medals, and a number of special framed certificates, for exceptionally efficient first aid rendered during 1935, the selections for which were made by Dr. H. Cavendish Fuller. Mr. Lean moved a vote of thanks to the doctors for adjudicating, to which Dr. McCormac and Dr. Crawford suitably replied, and added some valuable criticisms on the work of the teams. Replying to a vote of thanks proposed by Mr. W. J. Waite, Mr. Hambro had a special word of appreciation for the unfortunate "patients," who had played their part so excellently.

L.M.S.R. Ambulance Competition Final

The final round of the L.M.S.R. ambulance competition for England and Wales was held at Sheffield on Friday, May 1. Lady Stamp attended, and at the conclusion presented the prizes. The proceedings were presided over by Mr. G. L. Darbyshire, Chief Officer for Labour and Establishment, who was supported by the Lord Mayor and Lady Mayoress of Sheffield; Mr. C. Jones, District Goods and Passenger Manager, Sheffield; Mr. W. E. C. Lazenby, Assistant Chief Officer for Labour and Establishment; and Miss Mervyn, Welfare Assistant for Women and Girls.

The competitors were submitted to three tests, only one of which, the team test, was held in public. In this each team of four had fifteen minutes in which to deal with a patient who had fallen into a garden cold frame, and, as a consequence, was unconscious and suffering from head and leg injuries. The individual tests were confined to theory. The final positions of the teams, and the number of points obtained by each out of a possible total of 410, were as follow:—

1. Crewe (Machine Shop), 326 points.
2. Bushbury Locomotive Depot, 281 points.
3. Mayfield (Manchester), 267 points.
4. Accrington, 265½ points.
5. Newton Heath, 249½ points.
6. Saltley Traffic and Wolverton tied, 241 points.
8. Llandudno, 225 points.
9. Edge Hill, 222½ points.

In introducing Lady Stamp to the company at the conclusion of the competition, Mr. Darbyshire reviewed the work done by the members of the L.M.S.R. ambulance classes during the past year. There were nearly 9,000 employees in England and Wales with St. John's qualifications, and of these 1,785 had been members of the movement for over twenty years. He reminded the audience that during the last year Sir Josiah Stamp, Chairman and President of the Executive, had been made a Knight of Grace of the Order of St. John, and Mr. Lazenby a Commander of the same Order. Before presenting the prizes Lady Stamp made a short speech, in which she spoke of her personal interest in, and admiration for, the excellent practical work done by the L.M.S.R. ambulance workers.

After the distribution of the prizes for the team competitions, individual awards were made, of which two were to Linesman's Assistant J. E. Maskell of Northampton, and Clerk E. W. G. Norton, District Control Office, Willesden, for rendering particularly meritorious first aid to injured fellow workers.

Dr. G. S. Phillips replied to a vote of thanks on behalf of himself and his fellow examiners, Drs. A. Stuart-Holden and A. T. Lakin. He said every man examined was competent to deal with any emergency.

Ancillary Businesses of the British Railways

II—Hotels, Refreshment Rooms, and Restaurant Cars

Apart from being one of the most interesting of the ancillary businesses of the British railways, catering is also one of the most lucrative. In recent years a great deal of attention has been directed to the improvement of railway catering, with the result that today the hotel, refreshment room and restaurant car facilities available to the traveller on the British railways are at least equal to, if not in advance of, anything obtainable in other parts of the world.

Last year's catering results were particularly good, as will be seen from the following details extracted from the companies' accounts for 1934 and 1935:—

Company	Receipts		Expenditure		Surplus		Percentage of surplus to gross receipts	
	1935	1934	1935	1934	1935	1934	1935	1934
	£	£	£	£	£	£		
G.W.R....	699,457	666,849	620,871	591,381	78,586	75,468	11·2	11·3
L.N.E.R.	1,839,018	1,756,465	1,714,727	1,631,141	124,291	125,324	6·8	7·1
L.M.S.R.	2,861,859	2,833,028	2,482,242	2,469,853	379,617	363,175	13·3	12·8
Southern	128,923	108,772	123,188	112,121	5,735	Dr. 3,349	4·4	—

It will be observed that each company recorded an increase in gross receipts which in three cases was reflected in improved net results. The L.N.E.R. secured the greatest increase in gross takings, but recorded a small decrease in net receipts, due to maintenance costing £30,000 more than in 1934. The Southern company's account, which relates to hotels only, shows a profit for the first time since 1929.

Hotels

The British railways claim to be the owners of the largest group of hotel undertakings in the world. Altogether they own 76 hotels, of which they work 55. Details in respect of each company are given below:—

——	Owned and worked by company	Owned but not worked by company	Jointly owned	Total
G.W.R.* ...	3	3	—	6
L.N.E.R. ...	22	8	½	30½
L.M.S.R. ...	26	4	⅔	30⅔
Southern ...	3	6	—	9
Total...	54	21	1	76

* The G.W.R. also works the Fishguard Bay Hotel, which is owned by the Fishguard & Rosslare Railways & Harbours Company.

These hotels represent a considerable capital expenditure, details of which are set out below:—

	£
G.W.R.	288,632
L.N.E.R.	2,697,753
L.M.S.R.	5,303,328
Southern	1,388,223
Total	£9,677,936

The corresponding figure at the end of 1925 was £9,073,036, a comparison which affords some indication of the progress made during the last decade in hotels. The L.M.S.R., which claims to be the largest hotel owning and managing organisation in Europe, has been particularly active in this direction, and Sir Josiah Stamp recently stated that, with the exception of a few of the smaller hotels, the task of modernisation is practically complete. The Queen's Hotel, Leeds, is the latest to receive attention, and the Euston Hotel is scheduled for rebuilding under the Euston station scheme.

The modernisation of the L.N.E.R. Royal Station Hotel at Hull has been completed, and the Station Hotel at Newcastle is receiving attention. G.W.R. hotel activities last year included the enlargement of the Manor House Hotel, situated on the fringe of Dartmoor. Originally a private mansion, this establishment was purchased by the G.W.R. and opened as an hotel in 1929. It enjoyed immediate popularity, and the somewhat limited accommodation proved quite inadequate to meet the demands for accommodation during the summer months. Thirty-six additional bedrooms are now available, together with a new dining room capable of seating 140 people. The enlargement of the Great Western Royal Hotel at Paddington has been begun, the scheme including the addition of an entirely new wing, improved dining accommodation, and a new entrance. The G.W.R. is also to build a new hotel with 120 bedrooms at Looe, Cornwall.

Although the financial results of the companies' hotel undertakings are not shown separately, there is every reason to suppose that they constitute a sound investment and afford a satisfactory return on capital expenditure. Apart from this, many of the country hotels, such as Gleneagles in the Scottish Highlands, and Tregenna Castle in Cornwall, have served a useful purpose in opening up districts where there was originally insufficient local enterprise to undertake the provision of first class hotel accommodation.

Refreshment Rooms

Concurrently with the modernisation of hotel accommodation, the companies have lost no opportunity of improving their refreshment room facilities wherever possible. Station reconstructions have enabled the G.W.R. to do a good deal in this direction, notably at Paddington, Bristol, Newport, Cardiff, and Swansea. The most recent instance is at Bristol (Temple Meads), where the company has provided catering facilities on the most up-to-date lines, including the provision of a new dining room which represents a distinct advance on usual railway dining room accommodation. Another notable development last year was the opening of a quick lunch bar at Paddington.

Restaurant Cars

The British railways own 645 restaurant cars and 52 buffet cars, as shown below:—

	Restaurant cars	Buffet cars
G.W.R.	132	4
L.N.E.R.	220	47
L.M.S.R.	197	1
*Southern	96	—
Total	645	52

* This company's cars are operated by contractors.

The L.M.S.R. also operates in conjunction with its kitchen cars a large number of vestibule cars, which are not used wholly for the service of meals and therefore are not classified as restaurant cars. This no doubt explains why the numbers of restaurant cars on the L.N.E.R. and L.M.S.R seem to be disproportionate, in view of the larger catering business of the latter.

The majority of the restaurant cars provide a full service of table d'hôte meals, but in some cases, where there is insufficient business to justify this, light refreshments only are served. The buffet car represents the latest development in railway catering and is designed to meet the requirements of passengers on short-distance express services. Generally speaking, they are proving very satisfactory, but there is one point of criticism concerning the latest type of buffet car in which passengers are served from a counter extending the whole length of the vehicle, the sole seating accommodation being stand-up rest seats. This arrangement is probably acceptable to the majority of travellers but, on the other hand, many people dislike the idea of eating their food at a counter, and much prefer the arrangement of a small counter for service at one end of the car, thus leaving room for tables.

From time to time letters appear in the press complaining of railway catering arrangements, but much of the criticism fails to take into account the peculiar and expensive nature of the services which have to be provided. Railway refreshment rooms and restaurant cars have to rely on a more or less casual business; that is to say, they cannot expect the same measure of regular daily patronage which is enjoyed by the city restaurant or tea shop. Their business is subject to considerable fluctuations at week-ends and holiday times, and, since it is economically impossible to legislate for peak periods, the fact that comparatively small inconvenience is experienced by the public at such times reflects great credit on the efficiency of the staff and other arrangements.

German Summer Train Services

Important changes in the working of the high speed German diesel railcar services are announced to come into operation with the inauguration of the summer timetables on May 15 next. Among them there will be further examples of the principle of working two twin units together for a part of their journeys as multiple-unit sets, as has been done for some time past from Cologne to Duisburg with the Cologne-Berlin and Cologne-Hamburg-Altona railcars. In future the Fliegende Kölner will run from Cologne to Hamm in two sections, one, as at present, leaving Cologne at 7 a.m. and serving Düsseldorf, Duisburg, Essen, and Dortmund, and the other leaving at 7.20 a.m., and taking the shorter route via Wuppertal-Elberfeld and Hagen. The two sections will combine at Hamm, and will make the run of 109·6 miles to Hanover in 81 min. (81·2 m.p.h. start to stop, and an acceleration of 3 min. on the present allowance), while the 157·8 miles from Hanover to Berlin (Zoo) will require 122 min. (77·7 m.p.h.). Berlin (Zoo) will be reached at 12·8 p.m., and Friedrichstrasse at 12.19 p.m., a minute earlier than now, giving an overall acceleration, by the Wuppertal route, of 21 min. from Cologne to Berlin. In the reverse direction the working will be similarly arranged. Leaving Friedrichstrasse at 7.11 and Zoo at 7.22 p.m., the combined train will run to Hanover in 116 min. (81·6 m.p.h., and a deceleration of 1 min. on the existing time) and from there to Hamm in 80 min. (82·2 m.p.h. and an acceleration of 5 min. on the present time), these two consecutive stretches giving an overall speed of 81·4 m.p.h. for 267·4 miles, including the Hanover stop—an easy world's record for rail transport. The Elberfeld section will reach Cologne at 12.5 midnight, and the Düsseldorf section 12 min. later; the present time of arrival is 12.18 a.m. In this way the journey time over the 347·6 miles between Cologne and Berlin (Zoo) will be brought down to 4 hr. 48 min. on the outward journey and 4 hr. 43 min. on the return journey, giving averages of 72·4 and 73·7 m.p.h. respectively for the entire journeys, stops included.

The 7 a.m. departure from Cologne will also be used for the Cologne-Hamburg-Altona service, which will run attached to the Düsseldorf section of the Fliegende Kölner as far as Hamm, where the latter, in its turn, is attached to the Elberfeld section. The Altona railcar will thus be diverted from its present route from Duisburg to Münster via Wanne-Eickel, and as this diversion increases the distance by 13·8 miles, the journey time from Cologne to Hamburg (293·3 miles) will be increased by 12 min. to 4 hr. 35 min.; in the reverse direction this railcar will run independently throughout, following from Hamm 5 min. behind the Düsseldorf section of the Fliegende Kölner, and reaching Cologne 7 min. later, at 12.24 a.m., in 4 hr. 32 min. instead of 4 hr. 12 min.

The Berlin-Breslau-Beuthen service, hitherto with the " D " classification, conveying second and third class passengers, will now be changed to " FD," and third-class passengers excluded. It will stop at Schlesischer Bahnhof before leaving Berlin, but all stops after that —Frankfort-on-Oder included—will be cut out until Breslau is reached, this arrangement entailing a non-stop run of 204·6 miles, made in 159 min., at 77·2 m.p.h. start to stop. In the reverse direction the allowance will be 160 min. There will be acceleration of 10 min. from Berlin (Friedrichstrasse) which is left at 8.20 p.m., to Breslau, and 3 min. in the reverse direction, leaving Breslau at 7.10 a.m. This car will be due at Beuthen at 12.52 a.m., and will start its morning journey to Berlin at 5.29 a.m.

Electric Railcars

Very slight modifications are made in the working of the Berlin-Nuremberg-Munich service, the departure and arrival times of which are: Munich, depart, 6.40 a.m. arriving Berlin (Anhalt) at 1.20 p.m., and Berlin depart, 5.6 p.m. with an arrival at Munich at 11.42 p.m. An important development is the running, in connection with this service, of an express electric railcar non-stop from Stuttgart at 6.8 a.m. to Nuremberg, 126·1 miles in 135 min., and in the reverse direction in 134 min., Stuttgart being reached at 12.13 midnight. The new time of 7 hr. 7 min. from Berlin to Stuttgart is 67 min. faster than the previous best, while 7 hr. 12 min. in the reverse direction compares with a previous fastest time of 8 hr. 53 min. The express electric railcars between Stuttgart and Munich are continued, and the 4.9 p.m. from Stuttgart is continued to Berchtesgaden, giving a fast evening service from Munich at 7 p.m., non-stop over the 91·0 miles to Freilassing, in 107 min., to this popular Bavarian mountain resort. Berchtesgaden is reached at 9.43 p.m., and the return service is at 9.10 in the morning, reaching Munich at 11.55 noon, and Stuttgart at 2.24 p.m.

Streamlined Steam Train

The Henschel-Wegmann streamlined steam-driven unit, consisting of four coaches and a 4-6-4 tank locomotive, and shown at the recent Nuremberg Exhibition, is now to be put into regular service between Berlin and Dresden —a route which has not previously enjoyed any high speed services. Over the 111·7 miles between Berlin and Dresden two double journeys will be made daily, leaving Berlin (Anhalt) at 3.10 and 10.10 p.m., and Dresden (Hauptbahnhof) at 9.31 a.m. and 5.26 p.m., with a total mileage of 447 each day. The only stop will be at Dresden (Neustadt), and the running times over the 109·3 miles to and from Neustadt will vary between 94 min. (69·8 m.p.h.) and 97 min. (67·6 m.p.h.). The average time by the best existing steam services between Berlin and Dresden (Hauptbahnhof) is 2 hr. 21 min.; the four new trains will average 1 hr. 42 min.—a gain of 39 min. They will have the D classification, and admit third class passengers. The streamlined Borsig-built 4-6-4 express locomotive is also to go into regular service, on the non-stop morning express from Hamburg to Berlin, and the corresponding return evening train, which have start-to-stop bookings of 68·9 and 68·1 m.p.h. respectively. In future the Rheingold Express is to lose its exclusive FFD classification, and will be classed as FD, comformably with the principal first and second class express services.

A striking example of what can be done with an ordinary " D " class express train is furnished by the acceleration of No. D.34 from Breslau to Berlin, which leaves Breslau at 6.8 a.m. This will now make in succession start-to-stop runs of 40·4 miles in 39 min. (62·2 m.p.h.), 46·2 miles in 44 min. (63·0 m.p.h.), 7·9 miles in 10 min. (47·4 m.p.h.), 16·5 miles in 17 min. (58·2 m.p.h.), 16·9 miles in 17 min. (59·6 m.p.h.), 30·0 miles in 29 min. (62·0 m.p.h.), and 50·5 miles in 51 min. (59·4 m.p.h.). The 208·4 miles from Breslau to Berlin (Schlesischer Bahnhof) will be covered in an overall time of 216 min., inclusive of the six intermediate stops, and in an actual running time of 207 min., or at more than a mile-a-minute average throughout, and there is thus an acceleration of 10 min. on the previous times.

International Services

Elsewhere seven daily trains between the Saar region and Frankfort-on-Main are being accelerated by an average of 13 min. each. The Ostend-Vienna express, despite an additional stop at Mainz, is being expedited by 37 min. on its journey from Cologne to Passau, and by 49 min. in all from Cologne to Vienna, while the Orient Express is being accelerated by roughly one hour in each direction between Paris and Bucharest, though very little of the cut in time in this case takes place inside Germany. Numerous other improvements of individual train services are scheduled for introduction on May 15, but in the high speed realm, apart from the introduction of the new streamlined steam service between Berlin and Dresden, the Stuttgart-Nuremberg connection to the Munich-Berlin railcar service, and the modifications of the other diesel railcar services mentioned, the high speed standards attained last year with steam, diesel, and electric propulsion are remaining for the most part unaltered.

(*See editorial article on page* 897)

The Accelerated Midday Scot, L.M.S.R.

Some striking locomotive work was done on the inaugural run of the accelerated Midday Scot express of the L.M.S.R., which on Monday last made its first 7 hr. 35 min. run from Euston to Glasgow. Despite nine permanent way restrictions (besides those now regularly operative at Polesworth and from Law Junction into Glasgow, for which the schedules make allowance), and a signal stop for 2½ min. at Lamington, the arrival in Glasgow was 1½ min. early. The same engine—4-6-2 No. 6212, *Duchess of Kent*—worked through over the whole journey. From Euston to Crewe the train consisted of 14 vehicles taring 440 tons or 465 tons gross; at Crewe the addition of two coaches brought the tare to 493 tons (or within 7 tons of the maximum allowed over Shap), and the gross weight to 520 tons; and from Carlisle to Glasgow the load was nine vehicles, 277 tons tare and 290 tons gross. Notwithstanding six permanent way slows the train reached Crewe 2 min. early, in a net time of 153½ min., or 10 min. inside the schedule. On the easy grades north of Crewe a rapid start was made, Warrington, 24·0 miles, being passed in 24 min. 24 sec., with a maximum of 77½ m.p.h., and Lancaster, 71·9 miles, was reached in 77 min. 19 sec. (79 min. booked), or 76 min. net.

Principal interest attaches to the 59-min. booking over the 51·2 miles from Lancaster to Penrith, including the entire ascent to Shap Summit, 915 ft. above sea level. Up 2½ miles at 1 in 134 beyond Carnforth speed fell from 64½ to 49 m.p.h., and from Milnthorpe to Oxenholme from 66 to 45 m.p.h. From here up the 7 miles to Grayrigg a creditably even speed was maintained, being reduced to exactly 40 m.p.h. on the final 2 miles at 1 in 106. On the level stretch to Dillicar troughs speed recovered to 70½ m.p.h., and this carried the express up the 1¾ miles at 1 in 146 and 2 miles at 1 in 75 to Scout Green box without the speed falling below 40 m.p.h.; up the culminating 2 miles at 1 in 75 to Shap Summit there was a steady fall to a minimum of 27½ m.p.h. To Tebay 2 min. had been dropped; the time of 8 min. 21 sec. from there to the summit regained a little over ½-min.; and a maximum of 80½ m.p.h. at Clifton brought the train into Penrith only ½-min. late, with a careful slowing over the curve at Eamont junction. The train was drawn up twice at Penrith, but the sharp booking of 19 min. for the 17·9 miles thence to Carlisle was slightly improved on, and Carlisle was reached on time.

With only nine coaches from Carlisle, speed rose to 77½ m.p.h. in no more than seven miles. From a check near Quintinshill speed recovered to 53½ m.p.h. on the 1 in 200, while, on the second 1 in 200 uphill stretch (4¼ miles long) beyond Kirtlebridge, speed fell only to 61½ m.p.h., Beattock, 39·7 miles, was passed in almost exactly 38 min., as booked, and in about 37 min. net. The 10 miles of Beattock bank, varying in inclination from 1 in 88 to 1 in 69, took 15 min. 10 sec. instead of 18 min., with a minimum speed of 33¾ m.p.h. It would have been possible without difficulty, or excessive downhill speed, given a clear road, to pass Carstairs in "even time," but after attaining 76½ m.p.h. at Elvanfoot, the engine was eased, and the very severe slowing for the Clyde bridge at Lamington was followed by a dead stand north of that station for adverse signals. These two delays together cost fully 7 min.; yet Carstairs was passed only 2 min. late, and with due observance of all the pitfall slowings between Law Junction and Newton, it proved an easy matter to bring the train into Glasgow 1½ min. early. Deducting the two out-of-course delays, the net time for the 102·3 miles from Carlisle to Glasgow was 106½ min.

Thus, with net times of 153½ min. from Euston to Crewe, 76 min. thence to Lancaster, 59½ min. on to Penrith and 18½ min. from there to Carlisle, and, finally, 106½ min. from Carlisle to Glasgow, as compared with bookings of 163, 79, 59, 19, and 116 min., the total net gain to engine was 22 min., and the total net running time was 414 min., or 6 min. under seven hours.

L.M.S.R., THE MIDDAY SCOT—MAY 4, 1936
Engine: 4-6-2 No. 6212, *Duchess of Kent*

Load from Euston:
14 cars 440 tons tare, 465 tons full

miles		Schedule min.	Actual min. sec.	Speeds m.p.h.
0·0	EUSTON ...	0	0 00	—
5·4	WILLESDEN JC.	9	9 01	64½
11·4	Harrow	—	14 45	58½†
			p.w.s.	
17·4	WATFORD JC.	22	21 33	—
24·5	Hemel Hempsted	—	28 50	61
31·7	Tring	38	36 04	57½
40·2	Leighton Buzzard	—	43 13	79
46·7	BLETCHLEY ...	50	48 27	71½
52·4	Wolverton ...	—	53 10	76½
54·8	Castlethorpe ...	—	55 08	—
			p.w.s.	
59·9	Roade	62	61 07	—
62·8	BLISWORTH ...	65	64 31	—
69·7	Weedon	—	71 43	70½
75·3	Welton	—	75 54	57½
80·3	*Hillmorton* ...	—	80 40	71½
82·6	RUGBY	85	83 03	37*
88·1	Brinklow	—	89 36	—
93·5	Bulkington ...	—	94 20	74
			p.w.s.	
97·1	NUNEATON ...	100	98 24	—
			p.w.s	
102·3	Atherstone ...	—	105 39	—
			p.w.s.	
110·0	TAMWORTH ...	114	113 47	68
116·3	LICHFIELD ...	119	119 20	—
121·0	Armitage... ...	—	123 38	75
			p.w.s.	
124·3	Rugeley	126	126 58	—
129·5	Milford	—	132 33	64
133·6	STAFFORD ...	136	136 32	*
138·9	Norton Bridge ...	143	141 50	64
143·4	Standon Bridge ...	—	146 15	—
147·6	Whitmore ...	152	150 22	59
153·3	Betley Road ...	—	155 30	80½
158·1	CREWE... ...	163	160 55	—

Load from Crewe: 16 cars
493 tons tare, 520 tons full

miles		Schedule min.	Actual min. sec.	Speeds m.p.h.
0·0	CREWE... ...	0	0 00	—
4·8	Minshull Vernon...	—	7 41	—
8·7	*Winsford Junction*	11	11 16	—
14·4	Acton Bridge ...	—	15 54	77½
16·2	*Weaver Junction* ...	18	17 21	60*
21·2	Moore	—	21 43	74
24·0	WARRINGTON	26	24 25	60*
27·5	*Winwick Junction*	30	27 41	—
29·8	*Golborne Junction*	—	30 17	51
35·8	WIGAN	39	36 25	61
			p.w.s.	
38·0	Boar's Head ...	—	39 13	—
39·1	Standish Junction	43	40 57	—
44·2	Balshaw Lane ...	—	47 12	70½
			p.w.s.	
45·5	*Euxton Junction* ...	50	48 32	—
48·6	Farington ...	—	52 03	64½
50·9	PRESTON ...	57	55 03	25*
52·2	*Oxheys*	60	57 45	—
60·4	Garstang	68	66 25	66
66·2	Bay Horse ...	—	71 33	70½
70·8	*Lancaster Junction*	—	75 36	—
71·9	LANCASTER	79	77 19	—
0·0		0	0 00	
3·1	Hest Bank ...	—	5 28	57½
6·3	CARNFORTH ...	8	8 40	64½§
10·8	Burton and Holme	—	13 30	49
13·6	Milnthorpe ...	—	16 05	66
15·5	*Hincaster Junction*	—	18 03	57
19·1	OXENHOLME	21	22 23	45
22·0	*Milepost* 22 ...	—	26 18	43½
24·0	*Milepost* 24 ...	—	29 02	44½
26·1	Grayrigg ...	—	32 06	40
32·2	TEBAY	36	38 09	70½
35·2	*Scout Green* ...	—	41 38	40
37·7	*Shap Summit* ...	45	46 30	27½
39·7	Shap	—	49 00	—
47·0	Clifton	—	55 00	80½
50·1	*Eamont Junction*	—	57 44	50*
51·2	PENRITH	59	59 26	—
0·0		0	0 00	—
4·8	Plumpton ...	6	6 50	70½
10·5	Southwaite ...	—	11 17	85
13·0	Wreay ...	—	13 04	77½
16·5	*Carlisle No.* 13	—	16 07	83½‡
17·9	CARLISLE ...	19	18 26	—

Load from Carlisle, 9 cars
277 tons tare, 290 tons full

0·0	CARLISLE ...	0	0 00	—
4·1	Rockcliffe ...	—	5 25	70½
6·1	Floriston ...	—	7 08	77½
8·6	GRETNA JC.	10	9 05	72½
10·2	*Quintinshill* ...	—	10 25	68
			p.w.s.	
13·0	Kirkpatrick ...	—	13 37	—
16·7	Kirtlebridge	—	17 28	70½
20·1	Ecclefechan ...	—	20 30	—
22·7	*Castlemilk* ...	—	22 52	61½
25·8	LOCKERBIE	26	25 33	70½
28·7	Nethercleugh	—	28 02	71½
31·7	Dinwoodie ...	—	30 39	61½
34·5	Wamphray ...	—	33 15	71½
39·7	BEATTOCK ...	38	38 01	59
42·3	*Auchencastle* ...	—	40 58	43½
45·4	*Greskine* ...	—	45 49	33½
47·8	*Harthope* ...	—	49 53	35
49·7	*Summit* ...	56	53 11	35½
52·0	Elvanfoot ...	—	55 58	76½
57·8	Abington ...	—	60 24	74‖
			p.w.s.	
63·2	Lamington ...	—	66 40	—
			sig. stop	
66·9	Symington ...	—	75 57	—
68·5	Thankerton ...	—	77 24	76½
73·5	CARSTAIRS...	80	81 58	45*
78·5	*Craigenhill* ...	—	87 30	55
81·9	Carluke ...	—	90 38	72½
			p.w.s.	
84·0	LAW JC. ...	92	92 41	—
			p.w.s.	
86·4	Wishaw ...	—	95 41	64½
89·4	MOTHER-WELL	98	98 45	—
			p.w.s.	
93·9	Uddingston ...	103	102 59	68
			p.w.s.	
95·7	Newton ...	107	105 10	—
99·2	Rutherglen ...	—	109 16	—
101·3	Eglinton Street	—	112 12	—
102·3	GLASGOW CENTRAL...	116	114 29	—

* Service slack. † At Hatch End. ‡ At a mile before Carlisle No. 13.
§ At 1½ miles beyond Carnforth. ‖ At Crawford.

QUESTIONS IN PARLIAMENT

G.W.R. and Penarth Dock

Captain Arthur Evans on April 29 asked the Prime Minister if he was aware that on April 24 the G.W.R. announced that owing to a further decline in trade due partly to sanctions against coal exports to Italy, resulting in a loss of exports from South Wales from two to three million tons per annum, Penarth dock was to be closed; whether any Government department was consulted by the G.W.R. prior to this decision being made; if the Government proposed to locate any of the new Government works, or part of Woolwich Arsenal, in this area to compensate for the loss of salaries, wages, and other local revenues; and whether he was now in a position to announce his decision regarding the question of State assistance for South Wales generally, and economic restoration throughout the region.

Mr. Baldwin.—I am aware that the G.W.R. has announced that owing to the continued decline in coal exports it is closing Penarth dock temporarily. I must, however, correct my hon. and gallant friend's suggestion that sanctions against Italy have resulted in a loss of exports from South Wales of from two to three million tons a year. Most of the fall in exports, in fact, took place before sanctions were instituted. As regards the second part of the question, the general manager informed the Minister of Transport on April 17 that the proposals for the temporary closing of the dock were again before the company, and that a formal announcement would be made as soon as the decision had been confirmed by the board. As regards the third part of the question, I am not in a position to add to the statement on Government factories made by the Lord President of the Council in the Debate on March 2 last. The more general question raised in the last part of the question cannot be discussed within the limits of a Parliamentary reply, but my hon. and gallant friend will be aware that the Government's policy in relation to both special areas and areas of heavy unemployment has been fully explained on recent occasions.

Captain Arthur Evans on May 4 asked the Chancellor of the Exchequer how much of the Government guaranteed railway loan had been or was to be appropriated to the G.W.R.; whether he would make any allocation or any part thereof conditional upon the reopening of the Penarth dock and require that there should be no other similar curtailment of public services; and whether he would provide in any fresh grant of State assistance for similar safeguards to prevent the reduction of employment by the concerns so aided.

Mr. Chamberlain.—I presume that my hon. and gallant friend refers to the agreement with the main-line railway companies. The amount allocated to the G.W.R. was £5,435,660. As regards the remainder of the question, there is no provision in the agreement empowering me to impose such a condition as he suggests, nor do I think it would be appropriate in this or similar agreements to attempt to introduce considerations so clearly extraneous to the purposes for which assistance is afforded.

Captain Arthur Evans also asked the Chancellor of the Exchequer what financial assistance had been afforded by the Government to the G.W.R. since 1926 towards the cost of improving and maintaining the machinery and facilities of Penarth dock.

Mr. Chamberlain.—Under the Development (Loan Guarantees and Grants) Act, 1929, a grant towards interest was given to the G.W.R. in respect of a comprehensive scheme of dock and other improvements in South Wales, which included an expenditure ranking for grant at Penarth dock of approximately £5,000. It was a condition of the grant in respect of Penarth dock that it would be withheld in respect of any period during which, by the action of the railway company, the facilities of the port were not available to shipping and trade.

PARLIAMENTARY NOTES

Severn Bridge Bill

The case for the promoters of this Bill was opened on April 23 before a Select Committee of the House of Commons presided over by Sir David Reed. It is being promoted by the County Councils of Gloucester and Monmouthshire jointly, and provides for the construction and maintenance of a bridge across the River Severn and an approach road in connection therewith, and for the construction of a joint committee for the control and management of the bridge. The present road distance between Bristol and Cardiff is 90 miles and the bridge is expected to reduce this distance to 38 miles. The Ministry of Transport is prepared to make a grant of 75 per cent. towards the cost of the bridge, which is estimated at £2,470,000. The County Councils concerned are ready to provide 12½ per cent. of the cost, and the remaining 12½ per cent. is intended to be raised by tolls for a maximum period of 20 years. The Bill is being very strongly opposed on engineering and other grounds. The Great Western Railway Company, for instance, fears that the construction of the bridge may seriously affect the structure of the Severn tunnel and cause flooding, and there is also an objection on the ground of competition. The Bristol Corporation contended that the large number of piers necessary to carry the bridge would affect the flow of the river and cause an impediment to the tide which served Bristol docks. Some restriction on the vessels serving Sharpness docks was also apprehended by the Gloucester Corporation and the Sharpness New Docks & Birmingham & Gloucester Navigation. Newport Harbour Commissioners also opposed on tidal questions.

The attitude of the Ministry of Transport was explained to the Committee on May 5 by Mr. R. H. Hill. The grant by the Ministry was not contingent upon the contributions of bodies other than the promoters, but the Minister desired to encourage other authorities to come in. Sir Frederick Cripps, Chairman of the Gloucestershire County Council, said he could not give a figure as to the effect on the cost of county road maintenance by the transfer of some of the traffic to the new bridge. The Commissioner for Special Areas favoured the bridge scheme.

The Bill was still under consideration yesterday.

G.W.R. (Additional Powers) Bill

The preamble of this Bill was on April 30 declared formally proved by the Unopposed Bills Committee of the House of Commons, and was reported for third reading. The principal new works proposed are the construction of a deviation line from a point near Dawlish Warren to Newton Abbot, and a new railway about 7 miles long from a point near St. Germans to Looe. It is also proposed to abandon a section of the Marlborough branch railway, a new line having already been built in substitution; a section of the Rhondda & Swansea Bay Railway at Briton Ferry; and the construction of the Clydach Valley Railways, which were authorised in 1912. The Bill empowers the company to borrow £5,500,000 through the Railway Finance Corporation.

Progress of Railway Bills

The L.M.S.R. Bill which has been through the House of Commons was read a second time in the House of Lords on May 6. The L.N.E.R. Order Confirmation Bill was, on May 5, read a first time in the House of Lords, and (pursuant to section 7 of the Private Legislation Procedure (Scotland) Act, 1899), deemed to have been read a second time, and reported from the Committee. The third reading of the G.W.R. (Ealing & Shepherd's Bush Railway Extension) Bill was deferred till yesterday. It is being blocked by a group of South Wales members on the question of Penarth dock.

NEW G.W.R. HALT IN SOUTH WALES.—A new halt at Parcyrhun, situated between Pantyffynnon and Tirydail, near Llanelly, was opened on Monday last, May 4. It is served by six trains each way daily, with an additional service on Saturdays.

CONTRACTS AND TENDERS

The Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received an order from the Liverpool Corporation (Electricity Department) for 50 twenty-ton hopper - bottom steel coal wagons. Several previous orders have been received for similar wagons.

Railcar Orders

D. Wickham & Co. Ltd. has received an order from the Peruvian Corporation for one double power bogie standard-gauge petrol-driven railbus. The railbus will be approximately 50 ft. in length, will seat 52 first-class passengers, and will have luggage and lavatory accommodation also. Two Ford V8 engines will be used in conjunction with an electrically controlled four-speed epicyclic gearbox.

D. Wickham & Co. Ltd. has also received orders for four Flyweight petrol-driven inspection trolleys for the Province of Santa Fé Railways.

The Consolidated Brake & Engineering Co. Ltd. has received orders as follow :—

L.M.S.R. : 50 brake sets for container wagons built by Charles Roberts & Co. Ltd.

San Paulo Railway : 10 brake sets for coaches built by the Birmingham Railway Carriage & Wagon Co. Ltd.

Gold Coast Government Railway : three brake sets for bogie brake vans built by the Birmingham Railway Carriage & Wagon Co. Ltd.

Imperial Chemical Industries : 84 brake sets for bogie ballast wagons built by Charles Roberts & Co. Ltd.

South African Railways : 24 D. & M. ejectors.

Chinese Contracts for Germany

The Chekiang-Kiangsi Railway, China, has ordered eight heavy 2-8-2 tender locomotives from the firm of Henschel & Sohn A.G., of Kassel. These are intended for hauling goods and passenger trains on the Yushan-Nanchang section. Six similar locomotives were delivered early this year by the Henschel works.

The Otto Wolff company of Berlin, it is reported, has obtained a contract to continue with the fitting-out of the Nanchang-Pinghsiang section of the same railway. This is in connection with the Wolff company's contract, completed in 1934, to supply construction material and rolling-stock to the railways. It is understood that material necessary for the first part of the work on the 300-km. line has been ordered, including rails and other iron material, eight locomotives and 100 goods trucks, to a total of RM. 4,250,000, and that negotiations are going on for the order of still more material.

The Tilley Lamp Company has received an order for 20 Tilley floodlight projectors from the Canadian National Railways.

G. D. Peters & Co. Ltd. has received orders as follow : L.M.S.R. : 19 door-operating equipments for three-car units for Wirral electrification ; L.P.T.B. : door-operating equipment for two six-car units for District Railway. The latter order is for experimental equipment. The carriage doors will be operated by the passenger by means of internal and external buttons placed adjacent to each door.

The Great Western Railway has placed orders for equipment for Swindon works as follow :—

The Butler Machine Tool Co. Ltd. planing machine.

The Churchill Machine Tool Co. Ltd., locomotive axle journal grinding machine and a plain grinding machine.

The British Oxygen Co. Ltd., oxygen cutting machine.

C. Churchill & Co. Ltd., horizontal milling machine.

J. Lang & Sons Ltd., precision lathe.

Alfred Herbert Limited, two combination turret lathes.

Kitchen & Wade Ltd., drilling machine.

Wilkins & Mitchell, multiple drilling machine.

B. & S. Massey Limited, 40-cwt. steam hammer.

The Great Western Railway has also placed orders as follow :—

C. A. Hayes & Sons Ltd., Bristol, alterations and decorations at Bristol town offices.

Holliday & Greenwood Limited, London, provision of ladies' bathrooms under No. 1 platform, Paddington.

Austinlite Limited, Birmingham, an oil-driven alternating current generator.

Geo. Palmer Limited, Neath, construction of two bridges over the Highworth branch.

Geo. Palmer Limited, Neath, reconstruction and lengthening of bridge under Victoria Basin branch, near Herbert Street goods station, Wolverhampton.

Carriage Underframes for British Guiana

The Gloucester Railway Carriage & Wagon Co. Ltd. has received an order from the Crown Agents for the Colonies for two standard-gauge bogie carriage underframes, complete with bogies, wheels and axles and vacuum brake equipment for the British Guiana Government Railway.

G. H. Sheffield & Co. (Engineers) Ltd. has received, through its Calcutta Office, a further repeat order from the Udaipur Chitorgarh Railway for eight Sheffield-Twinberrow diamond frame passenger bogies, complete with wheels and axles and Framwel axleboxes.

G. H. Sheffield & Co. (Engineers) Ltd. has also received an order, to the inspection of Messrs. Rendel, Palmer & Tritton, for 20 Sheffield-Twinberrow double frame welded passenger bogies, fitted with Isothermos axleboxes, for coaches of 32 tons gross weight, for the metre-gauge system of the Bombay, Baroda & Central India Railway.

Boilers for India

The Hunslet Engine Co. Ltd. has received an order from the Junagad State Railway for three metre-gauge, large F class saturated locomotive boilers, to be supplied to the inspection of Messrs. Robert White & Partners.

W. G. Bagnall & Co. Ltd. has received an order, to the inspection of Messrs. Rendel, Palmer & Tritton, for six boilers for F class metre-gauge locomotives of the Gaekwar's Baroda State Railways.

Leyland Motors Limited has received orders from railway and railway-associated road motor concerns as follow:—

London Passenger Transport Board, six Cubs.

Central S.M.T. Co. Ltd., ten diesel-engined Titans.

Wilts & Dorset Motor Services Limited, two Cubs.

Southern Railway Rating

The Railway and Commission gave on May 5 its reserved decision on an application by the Railway Assessment Authority, the London County Council, the Middlesex Valuation Committee, and the Corporations of Brighton and Croydon, for a revision on points of detail of the £1,077,131 valuation of the Southern Railway undertaking, which had been fixed by the Railway and Canal Commission on February 6, 1935, and upheld by the House of Lords early this year. The application was based on a suggestion that the Court had made an error in applying the principles which it had itself laid down. The principal point was that the Commission had not allowed enough for depreciation when arriving at the value of the tenant's capital. The amount deducted was £11,686,000, representing 33⅓ per cent. of £35,000,000. It was also contended that the allowance of 15 per cent. for interest, &c., on the tenant's capital was too high, and that the Court had disregarded certain material considerations in arriving at the figures. The Court unanimously dismissed the application, with costs.

Mr. Justice MacKinnon, in the course of his judgment, said that the Court was being asked to say, one year and 75 days after delivering judgment, that it had made accidental errors of calculation. The arguments put forward by the applicants certainly did not demonstrate this. At the original hearing twenty witnesses were examined and masses of figures were examined. He had now only a vague recollection of that evidence. The applicants had in fact advanced a re-argument, and an entirely new argument, upon parts of the mass of evidence in the case, fortified by another elaborate tabular statement. It was a new argument because it imported a number of considerations which at the original hearing were never even mentioned. He was not satisfied that he had made any mistake at all, and further the Court was being asked to do what was impossible.

Sir Francis Taylor and Sir Francis Dunnell agreed.

NOTES AND NEWS

Milk Bar at Glasgow Central Station.—The first milk bar on a railway station in Scotland was opened at Glasgow Central on May 4. It is being run by the Scottish Milk Marketing Board.

Road Freight Services in Ulster.—The Northern Ireland Road Transport Board has decided to acquire, on June 2, 52 concerns which are at present running freight services. The area from which these companies operate embraces Holywood to Ballyquinton Point, and along the side of Strangford Lough to Newtownards and Dundonald.

Bricklayers' Arms Goods Depot Fire.—A fierce fire last Monday destroyed the large shed at the Southern Railway goods depot at Bricklayers' Arms which once formed a passenger terminus of the old South Eastern Railway. About 30 wagons, as well as all the other contents—mainly paper—were destroyed. The adjacent premises of Pickfords Limited (described in our issue of November 8 last) escaped damage.

Gauge Conversion of West Clare Railway Proposed.—Replying to the representative deputation that sought to enlist his support for the proposal to convert the West Clare Railway from 3 ft. to 5 ft. 3 in. gauge, Senator J. Connolly, of Ennis, stated last week that he would place the views of the deputation as strongly as he could before President de Valera when he returned from Zurich, and also before Mr. Lemass, Irish Free State Minister for Industry and Commerce. Reference to the gauge conversion proposals of this delegation was made on page 874 of last week's issue.

Compensation for Accident on Emergency Call.—At Clerkenwell County Court on May 1, Judge McCleary made an award to Mrs. Blee, the widow of an acting ganger on the L.N.E.R., of £300 compensation against the company. Mr. Blee, while on his way to Hornsey station, following an emergency call to a breakdown, was hit by a taxi-cab and injured and died some months later from cancer. The judge held that emergency calls counted from the time at which the workman left his home and therefore the accident arose in the course of Blee's employment. He also found that Blee's death was accelerated by the accident.

L.N.E.R. Train Service Improvements.—On Monday last, May 4, the L.N.E.R. introduced new passenger coaching stock on the train services between Leeds and Scarborough and between Newcastle and Carlisle. On the latter line seven trains daily each way now have buffet cars in which light meals are served. These new train sets consist of the latest standard corridor vehicles as used in the company's main-line services. Toilet accommodation is provided in all coaches, and both the first and third class compartments, arranged for three passengers each side, are fitted with intermediate arm-rests. Between Newcastle and Carlisle locomotive power is now provided almost exclusively by the 3-cylinder 4-4-0 "Shire" and "Hunt" classes.

Containers for Liner Luggage.—The Southern Railway made the experiment on Wednesday of transferring luggage direct in containers from Waterloo station to the French liner *Normandie*, calling off the Isle of Wight. Six containers were sent by rail to Southampton and there put on a tender which took them out to the liner. Here they were lifted on deck by cranes, so eliminating all intermediate handling of articles by porters.

First Class Pullman Seasons.—From May 4 the Pullman Car Co. Ltd. has issued first class quarterly seasons enabling holders of ordinary Southern Railway first class seasons between Victoria, London Bridge and Charing Cross, and Brighton, Worthing, Hastings, Eastbourne, and certain other stations in the same area, to use the Pullman facilities. The rates, which, of course, cover the Pullman supplement only, are £5 10s. to Haywards Heath, and £6 10s. to other stations.

L.M.S.R. Turbine Engine on Anglo-Scottish Trains.—On May 4 the L.M.S.R. turbine Pacific No. 6202 began dynamometer car trials between Euston and Glasgow with the up and down Royal Scot expresses. On the second day of the trials the minimum speed with the southbound train (weighing 500 tons tare) on the final 2 miles at 1 in 99 to Beattock Summit was 39 m.p.h. From the summit to Carlisle the 49¾ miles were run in slightly under 46 min., and the overall average from Symington to Carlisle (66·9 miles in 68¼ min.) was 58·3 m.p.h.

British Acetylene Association Luncheon.—The thirty-fifth annual meeting and luncheon of the British Acetylene Association was held at the May Fair Hotel, London, last Wednesday. Proposing the toast of Mr. A. Stephenson, the retiring President, Mr. C. D. Le Maistre referred to his services on the committee on welded containers of the British Standards Institution. Mr. Stephenson briefly acknowledged the toast. Mr. A. B. Harrower proposed "The Guests and Overseas Members," saying that the large gathering was a good augury for the success of the International Congress of Acetylene, Oxy-Acetylene Welding, and Allied Industries, which would open on June 8. Admiral Sir Roger Dickson replied for the guests; and Mr. Harvey Shattock, on behalf of the overseas members, said that the association was held in very high esteem abroad. Brig.-Gen. Magnus Mowat proposed "The British Acetylene Association and its President," to which the new President, Dr. J. Donald Pollock, replied, expressing his belief in the increasing importance of acetylene as welding replaced riveting in structural design.

Canadian Pacific Dividend Prospects.—Speaking at the annual meeting of the Canadian Pacific Railway Company at Montreal on May 6, Sir Edward Beatty, Chairman and President, said it was hoped that, with general improvement in business conditions which now seemed to be under way, and with a betterment in Western agricultural conditions, a resumption of dividends at least in respect of the preference shares would be possible in the near future.

L.N.E.R. Ambulance Competition.—The L.N.E.R. group ambulance competitions were held at Marylebone on April 29. Teams competed from each of the constituent companies of the L.N.E.R. The results were: 1st, Tuxford, Notts (Gt. Central Section), 213½ points; 2nd Parkeston (Gt. Eastern Section), 211 points; 3rd, Peterborough (New England) (Gt. Northern Section), 194½ points; and 4th, Hull Docks (N.E. Section), 189 points.

L.N.E.R. Poster Display at Brighton.—The L.N.E.R. has arranged for a display of its new art posters, together with a number of the originals, to be available for inspection in Room No. 3 of the Brighton Art Gallery, beginning on May 9 and continuing until June 21. The display will be open to the public on weekdays between 10 a.m. and 7 p.m. (on Wednesdays until 9 p.m.) and on Sundays from 2.30 p.m. to 5 p.m. At the same time an exhibition of the Bloomfield collection of woodcuts and engravings is being held in the same building.

Road Accidents.—The Ministry of Transport return for the week ended May 2 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year:—

	Killed, including deaths resulting from previous accidents		Injured	
England ...	109	(97)	3,592	(3,457)
Wales	3	(4)	144	(155)
Scotland ...	21	(11)	372	(387)
	133	(112)	(4,108)	(3,999)

The total fatalities for the previous week were 122, as compared with 126 for the corresponding period of last year.

New L.M.S.R. Vessel for Loch Awe Services.—A new vessel, the *Countess of Breadalbane*, is being assembled on the shores of Loch Awe, Argyllshire, for the L.M.S.R. William Denny & Bros. Ltd., of Dumbarton, manufactured the various parts of the ship at Leven shipyard, and sent them by rail to Loch Awe station. A twin diesel engine will give the vessel a speed of 10 knots. She will have accommodation for 200 passengers. Building will occupy two months, and the launch will take place in good time for the

summer season, when the ship will make the return trip daily between Loch Awe and Ford (22 miles). Through tickets in connection with the Loch Awe cruises will be issued from Edinburgh, Glasgow, and other stations. The old steamer *Duchess of Breadalbane*, which has been plying on the loch since 1882, is at present serving as the headquarters of the shipbuilders. This ship was also erected sectionally, and it will have to be broken up before it can be taken from the loch.

Waverley Station Platform Alterations.—On Monday last, May 4, alterations were made in the numbering of the platforms at Waverley station, Edinburgh, in order that the platforms may be located more easily. Previously there were four platforms, namely, the Main Up, east end; Main Down, east end; Main Down, west end; and Main Up, west end; which did not bear numbers, but these are now known as Nos. 1, 10, 11, and 19 respectively. The platforms are numbered consecutively from 1 to 10 at the east end and from 11 to 19 at the west end of the station. The new numbers appear over the platforms as white figures on a blue background, which is the new L.N.E.R. standard colouring for station signs.

Gloucester City Transport.—Revised terms of the proposed agreement between Gloucester City Council and the Bristol Tramways & Carriage Co. Ltd., for taking over the city omnibus undertaking, were approved by the council on April 29 by 24 votes to 8. Alderman C. E. Gardner (Chairman of the Gloucester City Transport Committee) said the company had made a further considerable concession to the terms originally proposed. It had also agreed, with certain exceptions, to engage all the officers and servants in the undertaking for 2½ years on terms not less favourable than those of men of like skill employed by the company. Any of the employees who had attained the age of 55 and had been in the Gloucester Corporation service for at least 31 years would be retained at their present wages until they became due for superannuation.

Inter-railway Ambulance Competition.—The annual competition for the Inter-railway Challenge Shield of the St. John Ambulance Association will take place at the Wharncliffe Rooms, Marylebone, on Thursday, May 28, when the competing teams will be: G.W.R., Swindon, and Fishguard Harbour; L.M.S.R., Crewe machine shops, and Bushbury Loco.; L.N.E.R., Tuxford, and Parkeston; S.R., Horsham, and Waterloo A.; ungrouped railways, Midland & Great Northern Joint. These teams have each been selected by a series of competitions organised by their respective railways, while the team from the ungrouped railways won its place at the preliminary contest arranged by the St. John Ambulance Association at St. John's Gate on March 27. The adjudicators in the forthcoming Inter-railway competition will be Dr. G. D. E. Tullis of Hereford for the team test, and Dr. R. B. Duncan of London for the individual work. The presentation of the shield and prizes will be made by Mr. William Whitelaw, Chairman of the L.N.E.R.

G.W.R. Experimental Railcar Parcels Service.—An experimental parcels service, operated by a specially built A.E.C. streamlined diesel railcar, was inaugurated by the G.W.R. on Monday last, May 4, between Paddington, Kensington (Addison Road), and local stations to Reading and Oxford. The car leaves Kensington (Addison Road) at 4.50 a.m. with J. Lyons & Company's cakes and confectionery for Reading and Oxford, where it is due at 5.45 a.m. and 6.35 a.m. respectively. At 6.45 a.m. it leaves Oxford for Paddington, stopping at stations *en route* and conveying local parcels traffic normally carried on the early morning business trains. In the afternoon it conveys traffic from Paddington at 1.5 p.m. for local stations to Reading, returning at 3.56 p.m. The new car (No. 17) is similar in design to the sixteen diesel railcars now in passenger service throughout the system, but, in place of the observation windows, it has three glass-panelled doors on each side to facilitate the rapid stowing and clearing of the parcels from the series of racks. The car, which we illustrate on p. 920 in service, is driven by two 130-h.p. diesel engines, and is capable of a speed of 70 to 75 m.p.h. The service marks a new era in the conveyance of parcels by rail, and it is hoped will avoid station delays to ordinary passenger trains from loading and unloading of parcels traffic.

Railway Electrification

Although the paper on main line electrification presented by Mr. E. R. Kaan before the Institution of Electrical Engineers on April 30 (abstracted in the *Electric Railway Traction Supplement* for May 1) was written not so much for discussion as to give a brief summary of the present position of railway electrification, a dozen speakers gave their views upon it after Mr. Kaan had sat down. Mr. F. Lydall, who opened the discussion, said he was of the opinion that it would pay to electrify a considerable mileage of main line in Britain, and he hoped that Mr. Kaan's paper would do something to help railway electrification in this country. Mr. Fairburn, Chief Electrical Engineer of the L.M.S.R., referred to the particular problems which brought about electrification. He thought that suburban electrification would go ahead rapidly in this country. Other speakers included Mr. G. H. Nelson (English Electric Co. Ltd.); Mr. E. H. Croft (General Electric Co. Ltd.); and Mr. T. Hornbuckle (L.M.S.R.), who bearded the Douglas in his hall by a spirited defence of the steam locomotive.

RAILWAY AND OTHER REPORTS

Buenos Ayres & Pacific Railway.—The directors, with the concurrence of the Stockholders' Committee, have resolved that a payment of one year's arrears of interest to December 31, 1935, should be made on the 4½ per cent. second debenture stock of the company on June 6 next (together with interest at the rate of 5 per cent. per annum on the arrears—amounting to £1 10s. 6d. per £100 stock—as provided by the scheme of arrangement of July 15, 1935). The payment will be made, less tax at 4s. 9d. in the £, to all holders registered at the close of business on May 6. The Argentine Great Western Railway Company will be handed a sum sufficient to enable it to distribute arrears of interest for the same period on its 4 per cent. second debenture stock, together with 5 per cent. per annum interest on arrears.

Devon General Omnibus & Touring Co. Ltd.—This company is jointly controlled by the British Electric Traction Co. Ltd., through its subsidiary, the National Electric Construction Co. Ltd. (50 per cent.), the Great Western Railway Company (30 per cent.), and the Southern Railway Company (20 per cent.). The profit for the year 1935, after providing for depreciation, was £72,022, against £73,549 for 1934. Adding £5,376 balance from the previous year makes a total of £77,398, against £76,421. The directors recommend that £30,000 (against £35,545) be appropriated to reserve, a dividend on preference shares for the year (£10,500), a dividend of 10 per cent., and a bonus of 2½ per cent. on the ordinary shares (£25,000), leaving £11,898 to be carried forward. The company, at December 31, 1935, owned a fleet of 195 omnibuses and coaches.

South Indian Railway.—The directors have decided to pay on July 1, 1936, an interim dividend from surplus profits of ½ per cent., less income tax (compared with 1½ per cent. paid on July 1, 1935), making with the interest guaranteed for the half-year ending June 30, 1936, namely, 1¾ per cent., less income tax, a total distribution for the half-year of 2¼ per cent.

Forthcoming Meetings

May 12 (*Tues.*)—**Charleroi to the Frontier of France Railway Company** (Annual General), Office in Charleroi of the Nord-Belge Railway, at 12.15 p.m.

May 12 (Tues.)—**San Paulo (Brazilian) Railway Co. Ltd.** (Ordinary General), Southern House, Cannon Street, E.C., at 12.30 p.m.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 18th Week			Totals to Date		
	1936	1935‡	Inc. or Dec.	1936	1935	Inc. or Dec.
L.M.S.R. (6,917 mls.)	£	£	£	£	£	£
Passenger-train traffic...	422,000	485,000	– 63,000	7,256,000	7,238,000	+ 18,000
Merchandise, &c. ...	508,000	461,000	+ 47,000	8,391,000	8,009,000	+ 382,000
Coal and coke ...	237,000	218,000	+ 19,000	4,757,000	4,541,000	+ 216,000
Goods-train traffic ...	745,000	679,000	+ 66,000	13,148,000	12,550,000	+ 598,000
Total receipts	1,167,000	1,164,000	+ 3,000	20,404,000	19,788,000	+ 616,000
L.N.E.R. (6,332 mls.)						
Passenger-train traffic...	278,000	293,000	– 15,000	4,787,000	4,776,000	+ 11,000
Merchandise, &c. ...	323,000	313,000	+ 10,000	5,805,000	5,562,000	+ 243,000
Coal and coke ...	233,000	218,000	+ 15,000	4,427,000	4,227,000	+ 200,000
Goods-train traffic ...	556,000	531,000	+ 25,000	10,232,000	9,789,000	+ 443,000
Total receipts	834,000	824,000	+ 10,000	15,019,000	14,565,000	+ 454,000
G.W.R. (3,746½ mls.)						
Passenger-train traffic...	179,000	205,000	– 26,000	3,040,000	3,047,000	– 7,000
Merchandise, &c. ...	197,000	192,000	+ 5,000	3,315,000	3,200,000	+ 115,000
Coal and coke ...	104,000	99,000	+ 5,000	1,933,000	1,865,000	+ 68,000
Goods-train traffic ...	301,000	291,000	+ 10,000	5,248,000	5,065,000	+ 183,000
Total receipts	480,000	496,000	– 16,000	8,288,000	8,112,000	+ 176,000
S.R. (2,154 mls.)						
Passenger-train traffic...	269,000	300,000	– 31,000	4,581,000	4,564,000	+ 17,000
Merchandise, &c. ...	71,000	65,000	+ 6,000	1,066,000	1,070,000	– 4,000
Coal and coke ...	33,000	26,000	+ 7,000	638,000	583,000	+ 55,000
Goods-train traffic ...	104,000	91,000	+ 13,000	1,704,000	1,653,000	+ 51,000
Total receipts	373,000	391,000	– 18,000	6,285,000	6,217,000	+ 68,000
Liverpool Overhead ... (6½ mls.)	1,087	1,159	– 72	20,055	19,855	+ 200
Mersey (4½ mls.) ...	3,851	3,995	– 144	74,166	73,501	+ 665
*London Passenger Transport Board ...	560,500	590,900	– 30,400	23,916,100	23,538,800	+ 377,300
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,703	1,919	– 216	32,629	33,239	– 610
,, ,, goods	672	590	+ 82	9,622	8,779	+ 843
,, ,, total	2,375	2,509	– 134	42,251	42,018	+ 233
†Great Northern pass. (543 mls.)	8,350	8,550	– 200	142,600	138,100	+ 3,900
,, ,, goods	10,950	10,050	+ 900	168,450	158,600	+ 9,850
,, ,, total	19,300	18,600	+ 700	310,450	296,700	+ 13,750
†Great Southern pass. (2,076 mls.)	32,953	36,686	– 3,733	490,752	485,575	+ 5,177
,, ,, goods	45,510	41,171	+ 4,339	716,296	677,126	+ 39,170
,, ,, total	78,463	77,857	+ 606	1,207,048	1,162,701	+ 44,347

* 44th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes.
† 17th week. ‡ Week prior to Jubilee last year.

London Transport Facsimile Memorial

Last year during excavations in connection with the building of a substation between Mark Lane and Aldgate stations, the London Passenger Transport Board unearthed a large number of Roman remains. Included in these (as we recorded on page 109 of our issue of July 19 last) was a portion of an inscribed stone which proved to be another fragment of a Roman tomb of which a similar stone had been found on the site in 1852 and deposited in the Roman Gallery of the British Museum but not identified. The newly discovered fragment enabled the inscription to be reconstructed as follows:—DIS. ANIBVS. [C.IVL.C.F.F.]AB. ALPINI. CLASSICIANI. PROC. PROVINC. BRIT[ANN.] IVLIA. INDI. FILIA. PACATA. I[NFELIX.] VXOR. It was thus seen that the stones were part of an altar tomb erected by Julia Pacata, daughter of Indus, in memory of her husband, Fabius Alpinus Classicianus, who was sent to Britain as Procurator in A.D. 61, after the outbreak of Boadicea's rebellion. Classicianus is mentioned in Tacitus ("Annals," xiv, 38). The tomb has been dated as about A.D. 66. The newly-found block has been presented to the British Museum by the London Passenger Transport Board, and all the fragments of the tomb now assembled in a reconstruction of the original. London Transport felt, however, that there should be some record of the memorial near the place of discovery, and instructions have been given for a facsimile of the two stones to be built into the wall of the substation. In an editorial note on page 894, further reference is made to the historical interest of the site.

BRITISH AIRWAYS: INCREASE OF CAPITAL.—The nominal capital of British Airways Limited has been increased by £54,760 (in ordinary shares of £1 each) to £300,000.

British and Irish Railways Stocks and Shares

Stocks	Highest 1935	Lowest 1935	Prices May 6, 1936	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	44½	48½	+½
5% Con. Prefce. ...	124	108	121½	—
5% Red. Pref. (1950)	117	106¾	110½	+1
4% Deb.	118½	108	115½	—
4½% Deb. ...	122	110	118½	—
4½% Deb. ...	129½	118	127½	—
5% Deb.	140¼	130	140½	—
2½% Deb.... ...	82¼	68½	78	—
5% Rt. Charge ...	137	128	135½	—
5% Cons. Guar. ...	136¾	120½	131½	—
L.M.S.R.				
Ord.	25 5/16	16	24½	+½
4% Prefce. (1923)	58¼	43½	72	—
4% Prefce. ...	87½	73½	87½	—
5% Red. Pref. (1955)	107	97¾	107½	—
4% Deb.	110¼	99½	110½	—
5% Red. Deb. (1952)	119 11/16	111 5/16	116½*	–2
4% Guar.... ...	105⅝	95½	105½	—
L.N.E.R.				
5% Pref. Ord. ...	15⅞	8¼	11½	—
Def. Ord.	7 9/16	4¾	5½	–¼
4% First Prefce....	74¾	48	69	–½
4% Second Prefce.	31⅜	16¼	27	–½
5% Red. Pref. (1955)	92¼	71	94½	—
4% First Guar. ...	103 11/16	93	103½	—
4% Second Guar.	98¾	82½	97½	—
3% Deb.	86	75	84½	—
4% Deb.	109¼	98½	109	—
5% Red. Deb. (1947)	118½	106½	112½	—
4½% Sinking Fund Red. Deb.	112½	108	109½	—
SOUTHERN				
Pref. Ord.... ...	87½	69⅝	94	—
Def. Ord. ...	25 13/16	16¾	24	—
5% Prefce. ...	124	108¼	122½	—
5% Red. Pref. (1964)	117¾	109½	118½	—
5% Guar. Prefce.	136½	121½	131½	—
5% Red. Guar. Pref. (1957)	121¼	112½	117½	—
4% Deb.	116¾	107	114	—
5% Deb.	138	130¼	138½	—
4% Red. Deb. 1962–67	115	106½	115½	—
BELFAST & C.D.				
Ord.	9	4	9	—
FORTH BRIDGE				
4% Deb.	111¼	104½	105½	—
4% Guar.... ...	109⅞	104	105½	—
G. NORTHERN (IRELAND)				
Ord.	20	7	19	—
G. SOUTHERN (IRELAND)				
Ord.	57½	14½	59	+4
Prefce.	50	25¼	60	—
Guar.	88¾	51¼	88½	+3
Deb.	86¼	70	90	+½
L.P.T.B.				
4½% "A" ...	130	119¾	125½	—
5% "A" ...	139¾	130	135½	—
4½% "T.F.A." ...	113¾	108	110	—
5% "B"	131½	122¾	129	—
"C"	109½	91	104	—
MERSEY				
Ord.	23⅛	9¼	26½	—
4% Perp. Deb. ...	100½	93½	97½	—
3% Perp. Deb. ...	75½	67	76	—
3% Perp. Prefce.	62	47¼	64½	—

* ex dividend

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.

Road and Rail Traffic Act, 1933. Agreed Charges.

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The said Applications may be inspected at the Office of the Tribunal, Bush House, Aldwych, London, W.C.2, at any time during office hours and at the following places:—

LONDON: Railway Clearing House, 123, Seymour Street, N.W.1.
BIRMINGHAM: District Goods Manager's Office, Snow Hill, Great Western Railway.
CARDIFF: Divisional Superintendent's Office, Great Western Railway.
EXETER: Western Divisional Superintendent's Office, Southern Railway.
LEEDS: District Goods Manager's Office, Wellington Street, London & North Eastern Railway.
LEICESTER: District Goods and Passenger Manager's Office, London Midland & Scottish Railway.
MANCHESTER: District Goods Manager's Office, Hunt's Bank, London Midland & Scottish Railway.
SOUTHAMPTON: Southern Divisional Superintendent's Office, Southampton Central, Southern Railway.
YORK: Goods Manager's Office, London & North Eastern Railway.
ABERDEEN: District Goods and Passenger Manager's Office, London Midland & Scottish Railway.
EDINBURGH: District Goods and Passenger Manager's Office, Waverley Station, London & North Eastern Railway.
GLASGOW: Commercial Manager's Office, Central Station, London Midland & Scottish Railway.

A copy of each Application lodged with the Tribunal can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s., post free.

Notices of objection by any parties entitled to object to the approval of any of the said Agreed Charges must state concisely the grounds of objection and must be filed at the office of the Registrar, Bush House, Aldwych, London, W.C.2, on or before the 3rd day of June, 1936, and a copy thereof on or before the same day served on or sent by registered post to Mr. G. Cole Deacon, at the above Address. A separate Notice must be filed and served in respect of each Application.

Each Notice filed must be on foolscap size paper and must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post for filing each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar when a stamp will be affixed at the office. A Notice by a Representative Body of Traders must contain a statement of the facts upon which such Body claims to represent a substantial number of traders interested in, or likely to be affected by the decision on, the application.

Five additional copies of each Notice must be lodged with the original at the office of the Registrar.

T. J. D. ATKINSON,
Registrar.

6th May, 1936.

Number of Application and Date of Lodgment	Parties to Agreement	Nature of Agreed Charge
1936. No. 215—April 22, 1936	JOHN MARTIN LIMITED, Commerce House, 29/55, Middlesex Street, London, E.1, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package. Mantles and Frocks.
1936. No. 217—April 30, 1936	GALBRAITH'S STORES LIMITED, 53, Back Sneddon Street, Paisley, Scotland, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. and L.P.T.B.	Per Live Pig. Live Pigs consigned to the Trader or his Agent.
1936. No. 218—April 30, 1936	REX ARNOT & CO. LTD., 1A, Blythswood Square, Glasgow, C.2, and the L. & N.E. and L.M. & S. Railway Cos.	Per cylinder of Gas. Butane Gas.
1936. No. 219—April 30, 1936	BRANSON & CO. LTD., Chase Works, The Chase, Clapham, London, S.W.4, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Coffee Extract; Advertising Matter; Empties returned to Suppliers.
1936. No. 220—April 30, 1936	THE BRITISH G.W.Z. BATTERY CO. LTD., Falmouth Road, Trading Estate, Slough, and the G.W. Railway Co. *Applicable also to traffic consigned by two Associated or Subsidiary Companies.*	Per ton. Dry Cell Batteries.
1936. No. 221—April 30, 1936	G. B. BRITTON & SONS LTD., Kingswood, Bristol, and the G.W. and L.M. & S. Railway Cos.	Per ton. Boots and Shoes.
1936. No. 222—April 30, 1936	THE DISTRIBUTERS & TRANSPORTERS LIMITED (MESSRS. UNILEVER'S DISTRIBUTING ORGANISATION), Unilever House, Blackfriars, London, E.C.4, and the G.W., L.M. & S. and Southern Railway Cos. *Applicable to traffic consigned by one Associated or Subsidiary Company.*	Per ton. Edible Fats in tins in cases.
1936. No. 223—April 30, 1936	THE DISTRIBUTERS & TRANSPORTERS LIMITED (MESSRS. UNILEVER'S DISTRIBUTING ORGANISATION), Unilever House, Blackfriars, London, E.C.4, and the Southern Railway Co. *Applicable to traffic consigned by one Associated or Subsidiary Company.*	Per ton. Edible Fats in tins in cases.
1936. No. 224—April 30, 1936	T. B. FINNEY & CO. LTD., Cornbrook Spice Mills, Manchester, 15, and the Cheshire Lines Committee and the G.W., L. & N.E. and L.M. & S. Railway Cos.	Per ton. Mixed Groceries; Herbs; Gelatine; Sausage Meal (P.A.B.); Sausage Skins; Brine in jars; Articles included in Grain List E; Advertising Matter.
1936. No. 225—April 30, 1936	THE METTOY CO. LTD., 70, Finsbury Pavement, London, E.C.2, and the L.M. & S. Railway Co.	Per ton. Toys.
1936. No. 226—April 30, 1936.	G. E. MEWIS LIMITED, 35, St. Paul's Square, Birmingham, 3, and the G.W. and L.M. & S. Railway Cos.	Per ton. Ropes and Twines; Cordage and String; Empties returned to Suppliers.
1936. No. 227—April 30, 1936	MINSTERLEY CREAMERIES LIMITED, Nova Scotia Street, Birmingham, and the G.W. and L.M. & S. Railway Cos.	Per ton. Butter, Cream, Condensed Milk, Cheese.
1936. No. 228—April 30, 1936	MONSOON COCOA MATTING CO. LTD., Clydesdale House, Turner Street, Manchester, and the Cheshire Lines Committee and the G.W., L. & N.E. and L.M. & S. Railway Cos.	Per ton. Mats and Matting.
1936. No. 229—April 30, 1936	REEVES & SON LTD., Ashwin Street, Dalston, London, E.8, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Paper in bales or bundles; Stationery and Stationer's Sundries; School Requisites; Colours in casks; Empties returned to Suppliers.
1936. No. 230—April 30, 1936	TOWLES (1928) LIMITED, Loughborough, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Hosiery.
1936. No. 231—April 30, 1936	JOHN WEBB & CO. LTD., Crescent Works, Hockley, Birmingham, 19, and the G.W. and L.M. & S. Railway Cos.	Per ton. Plumbers' Brass Foundry-Ware; Empties returned to Suppliers.
1936. No. 232—April 30, 1936	THE CO-OPERATIVE WHOLESALE SOCIETY LIMITED, 1, Balloon Street, Manchester and the Cheshire Lines Committee.	Per ton. Grease, Glycerine and Oils (not dangerous), except when conveyed in Owner's Tank Wagons; Candles and Tapers; Boiler Composition; Druggists' or Hairdressers' Sundries; Soap and other cleansing substances; Gifts; Advertising Matter.
1936. No. 233—April 30, 1936	THE CO-OPERATIVE WHOLESALE SOCIETY LIMITED, 1, Balloon Street, Manchester, and the Cheshire Lines Committee.	Per ton. Grease, Glycerine and Oils (not dangerous) except when conveyed in Owner's Tank Wagons; Candles and Tapers; Boiler Composition; Druggists' or Hairdressers' Sundries; Soap and other cleansing substances; Gifts; Advertising Matter.
1936. No 234—	Ditto.	Ditto.
1936. No. 235—April 30, 1936	SCOTTISH OILS LIMITED, 53, Bothwell Street, Glasgow, C.2, and the L. & N.E. Railway Co. *Applicable also to traffic consigned by seven Associated or Subsidiary Companies.*	Per ton. Candles and Tapers.
1936. No. 236—April 30, 1936	WM. SINCLAIR & SONS (STATIONERS), LTD., Albert Works, Otley, Yorks, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Stationery and Paper.
1936. No. 237—April 30, 1936	ANGUS WATSON & CO. LTD., Southall, Middlesex, and the L. & N.E. Railway Co.	Per ton. Groceries, Preserves and Provisions, Stationery, Show Cards, and Gifts for advertisement.
1936. No. 238—April 30, 1936	H. S. WHITESIDE & CO. LTD., 10, Parkhouse Street, Camberwell, London, S.E.5, and the G.W., L.M. & S., L. & N.E. and Southern Railway Cos.	Per ton Confectionery; Dried Fruit; Nut Kernels; Aluminium Stands; Glass Jars for Show purposes; Sheet Iron Heating Display Trays; Advertising Matter; Empties returned to Suppliers.
1936. No. 239—April 30, 1936	THE BANTAM PRODUCTS LIMITED, Bantam Works, Leeds, 12, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Coffee and Advertising Matter.
1936. No. 240—April 30, 1936	THE BECTIVE SHOE COMPANY, Northampton, and the L.M. & S. Railway Co.	Per package. Boots and Shoes.
1936. No. 241—April 30, 1936	BOULT BROS. LTD., 71, 73 and 75, St. Paul's Street, Leeds, 1, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Clothing and Drapery.
1936. No. 242—April 30, 1936	CHARLES DOODY & SON LTD., Longford Works, Crewe, and the L.M. & S. Railway Co.	Per package. Clothing.
1936. No. 243—April 30, 1936	DUKES (YORK) (1935) LIMITED, Leeman Road, York, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. (i) Dyed and Cleaned Goods. (ii) Goods for Dyeing and Cleaning.

Legal and Official Notices—*continued*

Number of Application and Date of Lodgment	Parties to Agreement	Nature of Agreed Charge
1936. No. 244—April 30, 1936	CHARLES EARLY & CO. LTD., Witney Mills, Oxfordshire, and the G.W. Railway Co.	Per package. Blankets.
1936. No. 245—April 30, 1936	JAMES HARE LIMITED, 72, Wellington Street, Leeds, 1, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Woollen Goods and Patterns.
1936. No. 246—April 30, 1936	J. HEPWORTH & SON LTD., Providence Works, Claypit Lane, Leeds, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Hats and Clothing.
1936. No. 247—April 30, 1936	INDIA RUBBER, GUTTA PERCHA & TELEGRAPH WORKS CO. LTD., Silvertown, London, E., and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package. Rubber Tyres; Golf, Tennis and Play Balls; Ebonite Telegraph Flex and Rubber Goods.
1936. No. 248—April 30, 1936	LEVER BROTHERS LIMITED, Port Sunlight, and the G.W. and L.M. & S. Railway Cos.	Per package. Perfumery, Soap, Toilet Preparations and Advertising Matter.
1936. No. 249—April 30, 1936	REEVES & SON LTD., Ashwin Street, Dalston, London, E.8, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package. Stationery, Stationers' Sundries and School Requisites.
1936. No. 250—April 30, 1936	THOMSON & PORTEOUS LTD., 105–109, Leith Street, Edinburgh, and the L. & N.E. and L.M. & S. Railway Cos. *Applicable also to traffic consigned by two Associated or Subsidiary Companies.*	Per package. Cigarettes, Cigars, Tobacco, Snuff and Advertising Material.
1936. No. 251—April 30, 1936	BRITISH VACUUM CLEANER & ENGINEERING CO. LTD., London, S.W.6, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package. Vacuum Cleaners and Parts and Advertising Matter.
1936. No. 252—April 30, 1936	JOHNSON BROTHERS (DYERS) LIMITED, Bootle Dye Works, Liverpool, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. and L.P.T.B.	Per ton. (i) Dyed and Cleaned Goods. (ii) Goods for Dyeing and Cleaning. (iii) Returned Empties.
1936. No. 253—April 30, 1936	C. R. McRITCHIE & CO. LTD., Market Street, Edinburgh, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Hosiery.
1936. No. 254—April 30, 1936	WILLIAM VEAL, 8, Beachfield Avenue, Newquay, Cornwall, and the G.W. Railway Co.	Per ton. Rabbits (dead).
1936. No. 255—May 1, 1936	BRITISH VINEGARS LIMITED, Caron Place, 87, South Lambeth Road, London, S.W.8, and the G.W. and L.M. & S. Railway Cos. *Applicable also to traffic consigned by four Associated or Subsidiary Companies.*	Per ton. Malt Vinegar; Preserves; Pickles and Sauces; Olive Oil; Show Cards; Advertising Matter; Empties returned to Suppliers.
1936. No. 256—May 1, 1936	JOHN LOVEYS & CO. LTD., 64/69, Cow Cross Street, London, E.C.1, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Boots and Shoes; Clothing; Hosiery. Empties returned to Suppliers.
1936. No. 257—May 1, 1936	JOHN BARRAN & SONS LTD., Chorley Lane, Leeds, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Clothing.
1936. No. 258—May 1, 1936	THE BROOK MANUFACTURING CO. (NORTHAMPTON) LTD., Clarke Road, Northampton, and the L.M. & S. Railway Co.	Per package. Ladies' and Children's Clothing.
1936. No. 259—May 1, 1936	MACFISHERIES LIMITED, 27, Pudding Lane, E.C.3, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. *Applicable also to traffic consigned by one Associated or Subsidiary Company.*	Per package. Fish.
1936. No. 260—May 1, 1936	MACFISHERIES LIMITED, 27, Pudding Lane, London, E.C.3, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. *Applicable also to traffic consigned by one Associated or Subsidiary Company.*	Per package. Eggs, Game and Poultry.
1936. No. 261—May 1, 1936	R. ROWLEY & CO. LTD., Queen Street, Leicester, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Hosiery.
1936. No. 262—May 1, 1936	UNITED DAIRIES LIMITED, 21, St. Petersburgh Place, London, W.C.2, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. and the Somerset and Dorset Joint Committee. *Applicable also to traffic consigned by six Associated or Subsidiary Companies.*	Per ton. Butter, Cheese, Cream, Eggs, Poultry (dead), Preserves, Honey, Lard, Margarine, Sauces, Condensed Milk, Advertising Matter and Stationery.

New L.N.E.R. Continental Boat Train

(*See illustration on page* 920 *and editorial note on page* 893)

On Sunday night the L.N.E.R. introduced an eleven-coach train of new stock on the Liverpool Street—Harwich (Parkeston Quay) Hook and Antwerp Continental service. The train is composed as follows: brake third; two compartment seconds, open second, and second restaurant car; all-electric kitchen car; first restaurant car, semi-open first, and compartment first; and two luggage brakes. A total seating capacity of 346 is provided by these vehicles (130 first class, 192 second, and 24 third), and they weigh 356¾ tons. With the addition of the two Pullman cars which run in this service, 42 more first class passengers can be seated, and the weight of the train is increased to 442¾ tons.

The new stock was built in the company's workshops at York, to the designs of Mr. H. N. Gresley, Chief Mechanical Engineer. It has been the company's object to make the nightly Continental service from Liverpool Street of *de luxe* standard throughout for all passengers both on rail and steamer, and to combine accommodation ranging from ordinary third class to first class Pullman in a single boat train, thus making no discrimination between the speed and convenience offered to the different classes.

All compartments on the train provide three-a-side seating with arm-rests. In the open first, passengers have movable armchairs developed from a seventeenth century English design, and the tables in this vehicle are for two only. The gangway is thus of ample width, so that no inconvenience is suffered from or by passengers with luggage, and train staff passing through the coach. A restful grey-blue colour scheme has been adopted here and in the panelling of the first and second class compartments. The wide windows in the open section of the semi-open first are also a feature of the compartments in this vehicle, in which a convenient fitting is the small shelf with two ashtrays on the window side. The open first and first restaurant car are given an air of added spaciousness on the lines adopted in the new cars introduced on the East Coast services last year, and referred to in our issue of April 12, 1935.

Attention to details of travellers' convenience and comfort characterises the appointments throughout the train, notably in the provision of electric immersion heaters to give hot water in the lavatories immediately passengers join the train in the early morning; as evidence of equal thought in minor matters, we would mention the very prominent numbering of reserved seats in the open coaches, and the ashtrays with lids to imprison the smoke of expiring cigarettes. A simple but effective ventilator, self-adjusting according to the direction of travel, is fitted above the windows in certain vehicles, and causes the exhalations of smokers to be extracted and dispersed upon the Essex air with an almost magical celerity. The roof ventilators are equally adequate for their purpose, and are adjustable by passengers while seated.

On a trial run from Liverpool Street to Parkeston Quay and back on May 1, the smooth riding, airiness, and silence of the new rolling stock at all speeds were well demonstrated. Among the party of L.N.E.R. officials and guests on the train were Captain R. Davis (Marine Superintendent, Parkeston), Mr. A. L. Gibson (Continental Traffic Manager), Col. H. H. Mauldin (Superintendent, Eastern Section), and Mr. A. H. Peppercorn (Assistant Mechanical Engineer, Stratford).

Railway Share Market

Largely owing to the latest developments in foreign affairs, most sections of the Stock Exchange have remained dull and reactionary. Home railway stocks declined at the beginning of the week, but were more active later at rather better prices on the Southern Railway rating decision. Although the latter was in accordance with expectations, it tended to draw attention to the dividend possibilities of the junior stocks generally.

Publication of another batch of satisfactory traffic figures was also a helpful influence, but owing to surrounding market conditions prices made only moderate response, and despite their subsequent improvement they are lower on balance for the week in some instances. It is true that the past week's receipts show an aggregate decrease of £21,000, but this is entirely due to passenger revenue showing a decline as compared with the pre-Jubilee week last year. L.M.S. ordinary is unchanged at 24½ and has been in request on the view that the railway's traffics are likely to continue to show the largest rate of increase and that the possibility of a dividend on the ordinary stock for the current year seems encouraging. The 4 per cent. preference recovered on balance from 87¼ to 88, while the 1923 preference is unchanged at 72. Southern preferred was good later in the week, when it recovered from an earlier decline, and is unchanged on balance at 94½, but the deferred is fractionally lower at 24⅓. A point of interest was the development of a better tendency in Great Western ordinary than for some time, and there has been a moderate improvement in price to 48⅓. This reflects the growing belief that in view of the rating decision, prospects of the maintenance of the dividend at 3 per cent. seem encouraging. The first and second preference were the best features among L.N.E.R. issues, particularly the second preference, which moved up nearly a point on Wednesday to 27½. The first preference also showed recovery from an earlier set-back. Guaranteed and debenture stocks held up well.

There was a firmer tone in foreign railway stocks, the lower prices made recently having attracted buyers who are looking for improvement in traffic receipts before long. B.A. Great Southern remained out of favour, but there was buying of B.A. Pacific and B.A. Western, both of which made slightly better prices at 7¾ and 13 respectively. Central Argentine also showed fractional improvement to 10, and the 6 per cent. preference gained a point to 26 on Wednesday. Canadian Pacific ordinary and preference were better on the statement at the meeting that with improvement in business conditions it is hoped that a resumption of preference dividends will be possible in the near future. American railroad issues made some recovery from their recent sharp decline.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1935-36	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1935	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1935	Prices: Lowest 1935	Prices: May 6, 1936	Prices: Yield % (see Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	834	3.5.36	10,860	– 180	18	240,170	223,640	+ 16,530	Ord. Stk.	23	14 15/16	21 1/2	Nil
	Argentine North Easterm ..	753	2.5.36	8,143	– 461	44	344,401	322,843	+ 21,558	,,	7	4	4 1/2	Nil
	Argentine Transandine ..	—	—	—	—	—	—	—	—	A. Deb.	49 1/2	30	47 1/2	8 16/16
	Bolivar	174	Apr., 1936	7,150	+ 400	17	26,900	26,300	+ 600	6 p.c. Deb.	13	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	14	11	14	3 9/16
	Buenos Ayres & Pacific ..	2,806	2.5.36	99,765	+ 4,969	44	3,715,962	3,438,636	+ 277.326	Ord. Stk.	10 1/2	4 7/8	8	Nil
	Buenos Ayres Central ..	190	11.4.36	$82,000	– $18,800	41	$4,519,400	$4,524,100	– $13,700	Mt. Deb.	21	10	17 1/2	Nil
	Buenos Ayres Gt. Southern	5,084	2.5.36	110,165	– 20,382	44	5,755,209	6,374,050	– 618,841	Ord. Stk.	27	13 1/2	16	Nil
	Buenos Ayres Western ..	1,930	2.5.36	49,060	– 1,206	44	1,993,211	1,984,146	+ 9,065	,,	24	10	13	Nil
	Central Argentine	3,700	2.5.36	94,183	– 38,531	44	5,231,165	5,291,211	– 60,046	,,	17 7/8	7	10	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	9	3 1/4	6 1/2	Nil
	Cent. Uruguay of M. Video	273	25.4.36	13,823	+ 2,411	43	476,502	594,424	– 117,922	Ord. Stk.	8 1/2	3	5	Nil
	Do. Eastern Extn.	311	25.4.36	3,118	+ 1,022	43	88,101	82,285	+ 5,816	—	—	—	—	—
	Do. Northern Extn.	185	25.4.36	2,123	+ 296	43	62,088	47,137	+ 14,951	—	—	—	—	—
	Do. Western Extn...	211	25.4.36	771	+ 307	43	37,916	33,141	+ 4,775	—	—	—	—	—
	Cordoba Central	1,218	2.5.36	25,620	– 810	44	1,225,470	1,232,870	– 7,400	Ord. Inc.	4	1	2	Nil
	Costa Rica	188	Feb., 1936	14,640	– 562	35	106,919	131,069	– 24,150	Stk.	35	30	36	5 9/16
	Dorada	70	Mar., 1936	12,900	+ 1 000	13	38,500	33,400	+ 5,100	1 Mt. Db.	103 5/8	102 1/2	104 1/2	5 3/4
	Entre Rios	810	2.5.36	9,624	– 1,144	44	471,649	537.297	– 65,648	Ord. Stk.	15	6 1/2	9	Nil
	Great Western of Brazil ..	1,082	2.5.36	5,600	– 500	18	159,000	168,000	– 9,000	Ord. Sh.	1/2	5/16	1/2	Nil
	International of Cl. Amer.	794	Mar., 1936	$569,809	+ $100,752	13	$1,563,107	$1,307,612	+ $255,495	—	—	—	—	—
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	1st Pref.	1/2	5/32	1/2	Nil
	La Guaira & Caracas ..	22¾	Mar., 1936	4,310	+ 270	13	12,960	10,540	+ 2,420	Stk.	8 1/2	8	8 1/2	Nil
	Leopoldina	1,918	2.5.36	14,374	+ 896	18	313,305	301,131	+ 12,174	Ord. Stk.	8 1/2	2 1/2	7	Nil
	Mexican	483	30.4.36	$384,300	+ $82,900	17	$4,493,500	$4,177,000	+ $316,500	,,	1 1/2	1/4	3/4	Nil
	Midland of Uruguay ..	319	Mar., 1936	7,747	+ 1,449	39	64,059	91,386	– 27,327	,,	1 1/2	1 1/2	1 1/2	Nil
	Nitrate	401	30.4.36	5,037	– 2,735	17	53,645	49,694	+ 3,951	Ord. Sh.	64/–	42/–	27 16	Nil
	Paraguay Central	274	2.5.36	$2,402,000	+ $448,000	44	$94,981,000	$49,584,000	+ $45,397,000	Pr. Li. Stk.	80 1/2	60	77	7 15/16
	Peruvian Corporation ..	1,059	Apr., 1936	83,397	+ 15,092	43	786,623	625,461	+ 161,162	Pref.	105 5/8	67 16	121 1/4	Nil
	Salvador	100	25.4.36	¢21,200	– ¢7,700	43	¢847,446	¢910,352	– ¢62,906	Pr. Li.Db.	65	61	65	7 11/16
	San Paulo	153½	26.4.36	25,500	+ 1,847	17	483,000	373,236	+ 109,764	Ord. Stk.	80	35	52 1/2 8	4 3/4
	Taltal	164	Mar., 1936	4,265	+ 87	39	32,750	26,885	+ 5,865	Ord. Sh.	1 11 16	1 1/8	1	10
	United of Havana	1,353	2.5.36	33,500	+ 7,794	44	1,038,048	1,032,172	+ 5,876	Ord. Stk.	3 1/16	1	3	Nil
	Uruguay Northern	73	Mar., 1936	921	+ 93	39	7,288	9,835	– 2,547	Deb. Stk.	4 1/2	2 15/16	4 1/2	Nil
Canada.	Canadian National	23,648	30.4.36	976,804	+ 60,641	17	11,064,308	10,476,509	+ 587,799	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	78 3/8	52 1/2	67 1/2	5 15/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	103 5/8	93	101 1/2	3 15/16
	Canadian Pacific	17,237	30.4.36	647,000	+ 27,800	17	7,972,800	7,285,000	+ 687,800	Ord. Stk.	14 1/16	8 3/4	11 1/2	Nil
India.†	Assam Bengal	1,329	10.4.36	31,042	– 2,132	1	31,042	33,174	– 2,132	Ord. Stk.	92 1/8	77 1/2	85 1/2	3 1/2
	Barsi Light	202	10.4.36	4,162	+ 7	1	4,162	4,155	+ 7	Ord. Sh.	105	77 1/2	72 1/2	6 7/8
	Bengal & North Western ..	2,112	20.4.36	82,069	+ 7,432	3	162,277	151,960	+ 10,317	Ord. Stk.	301 1/2	291	307 1/2	5 5/16
	Bengal Dooars & Extension	161	10.4.36	2,596	– 865	1	2,596	3,461	– 865	,,	127 1/2	122	125 1/2	5 9/16
	Bengal-Nagpur	3,268	31.3.36	196,725	– 2,113	52	6,458,171	6,043,477	+ 414,694	,,	105	100 5/16	102 1/2	3 7/8
	Bombay, Baroda & Cl. India	3,072	30.4.36	289,800	+ 39,525	4	852,225	726,900	+ 125,325	,,	115 1/4	110	112 1/2	5 5/16
	Madras & Southern Mahratta	3,230	10.4.36	159,750	+ 11,193	1	159,750	148,557	+ 11,193	,,	128 1/2	113 7/8	115 1/2	7 3/4
	Rohilkund & Kumaon ..	572	20.4.36	18,225	+ 925	3	37,235	36,069	+ 1,166	,,	294	262	299 1/2	5 5/16
	South India	2,531	10.4.36	114,454	+ 1,134	1	114,454	113,320	+ 1,134	,,	119 3/4	104 1/4	106 1/2	7 1/16
Various.	Beira-Umtali	204	Feb., 1936	61,814	+ 2,183	21	316,206	305,135	+ 11,071	—	—	—	—	—
	Bilbao River & Cantabrian	15	Apr., 1936	1,385	+ 363	17	6,062	7,150	– 1,088	—	—	—	—	—
	Egyptian Delta	622	20.4.36	5,524	+ 47	3	11,431	11,033	+ 398	Prf. Sh.	2	15/8	1 5/4	5 11/16
	Great Southern of Spain ..	104	25.4.36	1,619	– 489	17	19,366	32,582	– 13,216	Inc. Deb.	3 1/2	2	3 1/2	Nil
	Kenya & Uganda	1,625	Feb., 1936	245,527	+ 26,405	9	478,026	459,598	+ 18,428	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	48	36	44 1/2	7 7/8
	Mashonaland	913	Feb., 1936	98,894	– 6,317	21	509,798	569,259	– 59,461	1 Mg. Db.	104 1/4	100	103	4 7/8
	Midland of W. Australia ..	277	Mar., 1936	12,915	+ 910	39	124,864	122 226	+ 2,638	Inc. Deb.	98 5/4	93	94 1/2	5 9/16
	Nigerian	1,905	21.3.36	35,052	+ 8.749	51	1,882,142	1,947 363	– 65.221	—	—	—	—	—
	Rhodesia	1,538	Feb., 1936	179,001	– 769	21	935,446	932,189	+ 3,257	4 p.c. Db.	105 1/2	101	104§	3 15/16
	South African	13,250	11.4.36	587,505	+ 17,402	2	994,365	923,355	+ 71,010	—	—	—	—	—
	Victoria	4,728	Dec., 1935	866,995	– 3,320	26	4,826,292	4,751,974	+ 74,318	—	—	—	—	—
	Zafra & Huelva	112	Mar., 1936	9,520	– 1,537	13	30,751	32,962	– 2,211	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value.